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Midwest Agronomists Told That Fertilizer Is Best Buy Today for Farmers

By HENRY S. FRENCH
Croplife Editorial Staff

CHICAGO—"Fertilizer is the farmers' best buy today." How to keep it that way occupied the attention of the eighth annual Midwestern agronomists-fertilizer industry joint meeting sponsored by the Middle West Soil Improvement Committee at the Edgewater Beach Hotel here Feb. 16-17.

About 600 delegates registered for the convention, a figure which topped by 150 the previous record. Estimates of total attendance at the meeting ranged to 700. The program included reports on research in midwestern states by college agronomists; a paper on insecticide-fertilizer mixtures; and a talk on new soil insecticides. An innovation was a session on fertilizer mechanization, scheduled for the afternoon of the final day. (See accompanying story.) Much of the crowd stayed to the close.

The estimate of the value of fertilizer to the farmers was made by C. Russell Coleman, executive vice president, National Plant Food Institute, Washington, D.C., during his address to the group. All production items which a farmer buys have gone up 125% since 1935, said Dr. Coleman, but the cost of plant food has risen only 13%.

"Putting it another way, a bushel of corn today buys more plant food than it did 25 years ago," he said. "It took 35 bu. to buy a ton of fertilizer then. It takes only 20 bu. today.

The same is true of wheat. It took 25 bu. to buy an average ton of plant food in 1930; today it takes only about 19 bu."

Dr. Coleman said fertilizer today has more crop-building power. In the past five years, he said, the industry has increased its concentration of plant food per ton of fertilizer almost 23%.

"With the decline in net farm income," he said, "farmers are placing special emphasis on cost and value. Your product is the farmer's best buy."

Dr. Coleman said that at present and in the immediate future, re-

(Continued on page 19)

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Industry Problems Aired at Conference On Mechanization

CHICAGO—Something new added this year to the program of the Midwestern agronomist - fertilizer industry joint meeting was a fertilizer mechanization conference.

And, despite the fact that it was the final event and occurred on Friday afternoon when delegates were hurrying to get home, almost all seats in the Grand Ballroom of the Edgewater Beach Hotel were occupied.

Taking the form of a panel, the conference was scheduled partly because of requests of machinery manufacturers who are eager to best fill the needs of the industry.

With D. A. Williams, Minnesota Farm Bureau Service Co., St. Paul, Minn., moderating, the first panel

(Continued on page 8)

Allied to Expand Plant Facilities

NEW YORK — Nitrogen Division, Allied Chemical & Dye Corp., has announced that it will install at its Hopewell, Va., plant facilities for the production of solid ammonium nitrate 33½% N. The new facilities are expected to be in run about the end of 1956.

Nitrogen Division also announced that during March of this year it will place in operation at its Omaha, Neb., plant new facilities for the production of additional nitrogen fertilizer solutions. Construction has been under way for several months and will be completed in time to supply the heavy spring demand.

The new installations will produce solutions of the ammonium nitrate and urea types, marketed under the trade names Nitrana, Urana and Uran. At the present time the Omaha plant produces ammonia, urea-ammonia solutions and solid urea products.

Farmers Union Plans New Plant

LITTLE ROCK, ARK. — A new multi-million dollar fertilizer and agricultural chemical plant will be built in Arkansas next year.

Definite selection of Arkansas as the site for the plant was verified here by J. Albert Hopkins, president of the Arkansas Farmers Union. The plant will be constructed by the National Farmers Union, which originally had set the construction date for 1956.

Helena, Camden and El Dorado are bidding for the plant, but "several other localities in Arkansas might offer possibilities," Mr. Hopkins said.

Escambia Bay Dedicates New Nitrogen Plant

By LAWRENCE A. LONG
Editor of Croplife

PENSACOLA, FLA. — Escambia Bay Chemical Corp.'s $25 million nitrogen plant was dedicated here Feb. 17, with appropriate ceremonies, including talks by company officials, U.S. Sen. George A. Smathers, Congressman Robert A. Sikes and a personal representative of Florida's Gov. LeRoy Collins.

Under cloudy skies which threatened to produce rain, the out-of-door program proceeded smoothly before a large assembly of townspeople and guests who had been invited by the corporation and Ashcraft - Wilkinson Co., Atlanta, Ga., distribution and sales agents for Escambia Bay products. Police-escorted buses were utilized to provide transportation for invited guests from out of town. The plant is situated about 20 miles east of Pensacola near the town of Milton, Fla., on the Escambia Bay.

Sen. Smathers was featured speaker at a luncheon which preceded the afternoon's dedication service. He told the group of 300 about the sig-

(Continued on page 5)

First Shipments of Pelleted Mixed Fertilizer Leave Stauffer Plant

LOS ANGELES — The first shipments of pelleted mixed fertilizer have been made from Stauffer Chemical Co.'s new million dollar plant at Vernon (Los Angeles), Cal.

This plant is the first of several like it to be built by Stauffer in the West. It employs a process of manufacture developed by the company's research engineers.

The initial production and shipments were of 17-7-0. Current plans contemplate the regular production of 5-15-0, 10-10-5, 10-10-10 and other special mixtures, as well as pelleted single superphosphate.

Wilson & Geo. Meyer & Co. is Stauffer's exclusive selling agent for fertilizers.

Freight Rate Hike Delayed To March 7

Postponement May Indicate Full Raise Will Not Be Granted

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON — Railroad representatives last week agreed to a request by the Interstate Commerce Commission for additional time for ICC to reach a decision on the pending proposed 7% increase in freight rates.

The carriers agreed to postpone the effective date of the new tariff to March 7, pending the decision of ICC on evidence submitted in oral hearings and in briefs submitted by both sides. Originally, the carriers had asked for the increase to be effective Feb. 25.

The 7% rate advance has been under concentrated attack by virtually all shippers.

Paul Truitt, executive vice president of the National Plant Food Institute, appearing before the Interstate Commerce Commission, expressed the dissatisfaction of his industry with the request for higher freight rates.

The fact that ICC asked for a delay in reaching its decision may forecast that it will not go more than half way in approving the new tariff schedules.

Inside You'll Find

Over the Counter 9
What's New 10
Oscar and Pat 12
Bug of the Week 14
World Report 18
Editorials 22
Meeting Memos 23
Index of Advertisers 23

Production of Superphosphate Shows 3% Gain in 1955; Shipments Up 9%

WASHINGTON — Production of superphosphate in 1955 totaled 2,310,306 short tons, a gain of 3% over the 1954 output of 2,237,900 short tons, the U.S. Department of Commerce has reported.

Shipments in 1955 totaled 1,491,178 short tons, up 9% from 1,368,929 in 1954.

Output of normal superphosphate last year was 1,556,880 short tons, down 4% from 1,627,145 in 1954; enriched totaled 39,042, down 3% from 40,360; concentrated was 706,584, up 26% from 561,870, and wet-base goods was 7,800, down 6% from 8,325.

Shipments of normal totaled 837,959 short tons in 1955, down 1% from 843,732 a year earlier; enriched 14,130, up 10% from 12,888; concentrated 632,327, up 26% from 500,194, and wet-base goods 6,762, down 5% from 7,115.

Stocks on hand at the end of December totaled 333,608 short tons, a gain of 15% from 295,719 short tons a year earlier.

The statistics include data for all plants known to have facilities for superphosphate manufacture, including government-owned plants, the Department of Commerce noted. The statistics pertain only to superphosphate as such, and include no data for superphosphate in dry-base or dry-mixed goods.

AT 30TH ANNUAL MEETING

A. N. Tissot Heads Cotton States ESA; Norman Allen Named Chairman-Elect

ATLANTA—Dr. A. N. Tissot, University of Florida Agricultural Experiment Station, Gainesville, was elected chairman of the Cotton States Branch, Entomological Society of America at the thirtieth annual meeting of the branch, held at the Biltmore Hotel here recently.

The meeting, held in connection with the gathering of the Association of Southern Agricultural Workers (see page 1 of the Feb. 20 issue of Croplife), attracted about 200 entomologists and guests.

Other officers named were Dr. Norman Allen, Pee Dee Experiment Station, Florence, S.C., chairman-elect; Dr. W. G. Eden, Department of Zoology-Entomology, Alabama Polytechnic Institute, Auburn, secretary-treasurer, and O. I. Snapp, Entomology Research Branch, Fort Valley, Ga., representative to the governing board. Retiring chairman is H. C. Young, U.S. Department of Agriculture, Florala, Ala.

The first day of the meeting included an address by Dr. B. A. Porter of Beltsville, Md., who is president of the Entomological Society of America. Also heard was a report of a committee that had been studying entomological curricula in the various institutions over the country, which was presented by F. E. Guyton, Auburn, Ala.

The afternoon of the first day's meeting was devoted to papers on cotton insect research. A paper on resistance of the boll weevil to chlorinated hydrocarbons was presented by J. S. Roussel and Dan Clower of the Louisiana State University Agricultural Experiment Station. Other papers on cotton insects were presented by leading entomologists from Alabama, Georgia, Arkansas, South Carolina, North Carolina and Louisiana.

On the second day of the meeting, Feb. 7, a series of papers on results of research on forest insects was presented. Dr. R. Joseph Kowal of the Southeastern Forest Experiment Station, Asheville, N.C. led off with a discussion on the progress and needs in forest insect research, survey and control in the Southeast.

On the same day a series of papers on insects of man and animals was given. Some highlights of this series included a report on the present status of some major arthropod-borne diseases in the U.S. by R. C. Barnes, H. D. Pratt and Roy Fritz of the U.S. Public Health Service, Atlanta.

AGREEMENT SEALED—To form[al]ly seal a long association, Hans Sta[uf]fer, left, president of the Stauf[fer] Chemical Co., and Wilson Mey[er], right, president of Wilson & G[eo] Meyer & Co. recently signed a lo[ng] term exclusive sales agreement. S[ee] story on page 1 of the Feb. 6 is[sue] of Croplife.

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Western Cotton Production Conference Set for March 6-7

MEMPHIS — Cotton growing p[ro]blems will be considered from t[he] standpoint of increased efficiency a[nd] reduced cost in the Far West wh[en] the fifth annual Western Producti[on] Conference meets in Fresno, C[al.] March 6-7.

The National Cotton Council is [co]sponsoring the meeting in cooperati[on] with Southwest Five-State Cott[on] Growers Assn. and other Weste[rn] producer groups.

High in importance at this yea[r's] meeting will be discussions on see[d] bed preparation in the Far W[est] where irrigation is used for all c[ot]ton production.

As in previous years, the confe[r]ence will consider also latest r[e]search developments affecting s[oil] fertility, disease control, irrigati[on] weed control, insect control, defol[ia]tion and needs for improving and p[re]serving lint quality.

Headquarters for the meeting w[ill] be the Fresno Hacienda, but housi[ng] facilities in a number of other hot[els] and motels will be reserved to han[dle] the six to eight hundred growers, r[e]searchers, farm educational and co[m]mercial personnel expected to atte[nd].

Requests for reservations sho[uld] be sent directly to one of the f[ol]lowing: Fresno Hacienda, Hotel C[al]ifornian, Hotel Fresno, Towne a[nd] Country Motel, Sands Motel, Tow[ne] House, Fresno Motel or Hotel [El] Rancho.

John A. Wilson Appointed Assistant Secretary of Diamond

CLEVELAND—Election of John[A.] Wilson as assistant secretary of D[ia]mond Alkali Co., Cleveland, was [an]nounced here recently by Donald [S.] Carmichael, secretary, following [a] meeting of the board of directors.

Mr. Wilson comes to Diamond w[ith] 10 years' experience in legal and l[e]islative work. Formerly an attor[ney] in the legal department of Dres[ser] Industries, Inc., he was secretary [and] company counsel of Affiliated [Gas] Equipment, Inc., Cleveland, fr[om] September, 1950 to May, 1955, [and] since then has had his own law pr[ac]tice.

Allied Consolidates San Francisco Offices

SAN FRANCISCO—Allied Che[mi]cal & Dye Corp. has announced c[on]solidation of its San Francisco s[al]es offices in new quarters at Russ Bl[dg.] 235 Montgomery St., San Francisc[o]. The telephone number is Yuk[on] 2-6840. The change, effective Feb. [1], is for eight Allied operating divisi[ons] including Nitrogen Division.

Now spray away WILDFIRE and Blue Mold with Agri-mycin® 100*

Protect your plant bed for only $1.95

without Agri-mycin

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These two seed beds—from the same plot in Kentucky show how effectively Agri-mycin prevents development of wildfire and blue mold in the seed bed. Agri-mycin treated plants were much more vigorous, with heavier root systems.

Insure a full healthy stand

without Agri-mycin

with Agri-mycin

Stronger-growing plants from seed beds kept disease-free with Agri-mycin virtually eliminates wildfire in the field.

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Throughout the Burley Belt, tobacco growers are getting a bigger crop from their limited average allotments with Agri-mycin.

Tobacco grower Mr. W. H. Bugg of Campbellsville, Ky., estimates an increase in yield of approximately 250 lbs. per acre through the use of Agri-mycin.

This new antibiotic crop-saver is the only one that gives you the 2-way protection of *both* streptomycin and Terramycin®

It is much more effective than standard copper sprays or bordeaux for wildfire control, and in addition, also controls blue mold.

Your regular supplier of spray materials now has Agri-mycin for Tobacco in a new, economical 2.4-oz. size.

It makes up to 28 gallons of spray—enough to protect 100 square yards of plant bed for the season. Also available in larger sizes for commercial growers.

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FDA Legislation To Be Discussed At NAC Meeting

WASHINGTON — The effect of Food and Drug legislation on farmers and growers throughout the nation will be discussed by George P. Larrick, U.S. Commissioner of Food and Drugs, at the spring meeting of the National Agricultural Chemicals Assn. The meeting will be held in the Hollywood Beach Hotel, Hollywood, Fla., March 14-16.

Mr. Larrick will speak March 16, following the presentation of a proclamation by LeRoy Collins, Florida governor, designating the week of March 19-25 as "Food and Drug Golden Anniversary Week" in Florida. The proclamation will be presented in honor of the fiftieth anniversary of food and drug laws which is being celebrated throughout the country during 1956.

The most recent addition to the Food and Drug Laws is the Miller Pesticide Residue Amendment signed by President Eisenhower in 1954. The Miller Amendment assures the public of an ample supply of high-quality, nutritious and safe foods insofar as agricultural chemicals are concerned.

Other features of the three-day meeting will include reports on the latest advances in the use of atomic energy in agriculture, the future of fungicides in controlling plant diseases and a special report on the NAC program to promote the safe use of agricultural chemicals.

In announcing the program, L. S. Hitchner, NAC executive secretary, stated, "agricultural chemicals are being used by farmers and growers more than ever before to help cut production costs and thereby to increase their net incomes.

"The growing importance of chemical control to farming efficiency is underscored by the fact that insects, plant diseases, weeds and other farm pests are expected to destroy the output of nearly five billion man-hours of productive farm work in the U.S. this year. All measures used to control these pests effectively and safely will have a direct bearing on farmers' net income and on raising their standard of living.

"Few questions are more important today than this problem of raising farmers' net income. Speakers at the spring meeting will explore a number of ways farming efficiency can be improved through the use of pesticide chemicals and how these advances will benefit the nation's farmers and growers."

The program March 14 will include a report on the industry by W. W. Allen, manager, Agricultural Chemical Sales, Dow Chemical Co., Midland, Mich, NAC president; an address on the part land grant colleges play in developing new agricultural chemicals, entitled "Universities and the Chemical Industry," by Dr. J. Wayne Reitz, president, University of Florida; a talk on the marketing of pesticide chemicals entitled, "The Agricultural Chemicals Industry—A Teen-Ager Growing Up," by John A Field, vice president, Carbide and Carbon Chemicals Co., New York, and a report of "Atomic Energy in Agriculture" by Dr. S. B. Hendricks, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Md.

In addition to Mr. Larrick's talk and the presentation of Gov. Collins' proclamation, the March 16 program will include a report on the NAC "Read the Label" safety program by Mr. Hitchner; "The Future of Fungicides in Agriculture" by Dr. George L. McNew of Boyce Thompson Institute for Plant Research, Yonkers, N.Y.; "USDA Programs Affecting Pesticides" by Dr. H. L. Haller, assistant director, crops research, U.S. Department of Agriculture, Washington, and "Research and Economics in the Cotton Industry" by Dr. H. G. Johnston of the National Cotton Council, Memphis.

March 15 is being reserved for association committee meetings. Mr. Allen and Mr. Hitchner will hold a press conference that day to answer questions from the working press concerning the agricultural chemicals industry.

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- ✓ Calcium Nitrate 15.5% N
- ✓ Nitrogenous Tankage 10/11% NH_3

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Dow Plans New Louisiana Operation

MIDLAND, MICH. — Plans for a new $20,000,000 manufacturing operation, to be located in the Baton Rouge area of Louisiana, were announced Feb. 22 by the Dow Chemical Co.

Dr. Leland I. Doan, Dow president, disclosed the company has taken options on three tracts of land on the west bank of the Mississippi with the expectation of building facilities to produce chlorine, caustic soda and several organic chemicals.

There will be no production of agricultural chemicals initially, the company said. However, the plant has raw materials used in many agricultural chemicals, and developments in that field will be closely watched.

Dr. Doan said that initial plans call for the investment of at least $20 million and the employment of about 500 persons.

NEW PATHOLOGIST

PULLMAN, WASH.—A new member of the plant pathology department staff, Dr. Edmond E. Tylutki, recently arrived on the Washington State College campus. He will fill the temporary vacancy brought about by Dr. C. C. Shaw's six-month sabbatical leave.

INSECT AND PLANT DISEASE NOTES

Fruit, Truck Crop Insects Noted in Florida

GAINESVILLE, FLA.—Fruit and truck crop insects are noted in the current insect report from Florida, issued by H. A. Denmark.

Sweetpotato weevil in all stages was collected in storage at five different locations in Lee, Madison County. Vegetable weevil in larval stage averaging two per leaf was collected on turnip at Quincy, Gadsen County.

Florida red scale in all stages averaging 1-20 per leaf and purple scale in all stages in plant, leaf and stem were collected on orange at Frostproof, Polk County. Pyriform scale in all stages averaging 1-2 per leaf was collected on avocado at Gainesville, Alachua County.

Banana root borer in the adult stage averaging 20 per plant was collected on banana at Coral Gables, Dade County. A pentatomid in the adult stage averaging one per plant was collected on orange at Waverly, Polk County and at Frostproof, Polk County. A pentatomid in adult stage was collected on grapefruit at Waverly, Polk County. Only 5 found on one leaf.

Appearance of Alfalfa Aphid Highlights 1955 Kansas Insect Report

MANHATTAN, KANSAS — The spotted alfalfa aphid was found for the first time on alfalfa in Kansas during the first week in April, 1955, according to a report just issued by entomologists David L. Matthew and Dell E. Gates, covering insect conditions in the state for 1955. The report, in the form of a summary, states that though the spotted alfalfa aphid was not known in the state before April last year, it had spread by June, to nearly all counties of the southern half of the state, and later were found throughout the state.

Yellow clover aphid was found in non-economic numbers in 10 northeastern counties. Sweet clover aphid infestations were non-economic and were found throughout the state wherever sweet clover was grown. Pea aphid was much lighter than in 1954.

Garden webworm developed to destructive numbers in a few fields of southeastern counties, but populations were lower and less widespread than in 1954. Tarnished plant bug and rapid plant bug were common in most alfalfa fields throughout t state.

Light infestations of alfalfa pla bug were found in most alfalfa fie of northern and northeastern Ka sas. Army cutworms were less abu dant in 1955 than in the previo year.

Armyworm populations did no present the serious outbreak i 1955 that had occurred the pre vious year. Crop losses in 195 mostly in east central and south eastern counties were estimated a $172,000, or about one tenth tha of 1954.

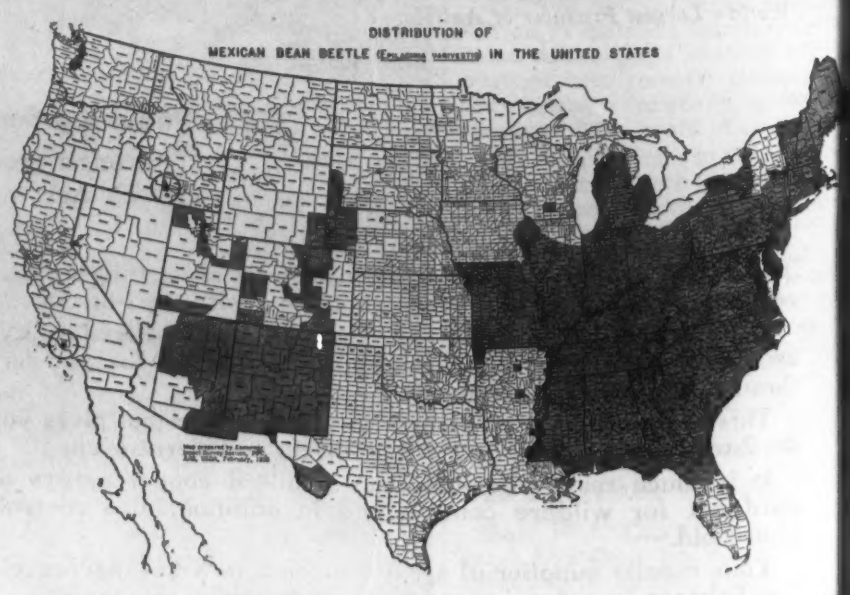
Chinch Bug infestations were mo prevalent in 1955 than in the tw previous years. Weather favorable f chinch bug activity plus increas acreages of sorghums and wint barley were largely responsible. T 1955 outbreak was more widespre and of greater intensity than ha been expected. Greatest losses can from reduced stands of sorghums a from decreased yields of both co and grain sorghums. Heaviest i festations were found in central a east central counties. Chinch bu caused an estimated $2 million lo during 1955.

Grasshopper populations develope much as predicted by the 1954 adu and egg pod surveys. Although sprin nymph counts were high in the eas ern third of the state, ultimate dam age was less than expected. Infest tions were heavier and more wid spread than expected in central a western counties where moderate severe damage occurred.

Some spraying just before whea harvest was necessary in weste Kansas, to prevent chewing-off of th ripening mature heads. Threatenin to severe populations of range-fee ing grasshoppers caused damage several thousand acres of rangela in the southern tier of southweste counties.

The fall corn borer survey showe very few southwestern corn borers the northern half of the state. Du ing the spring, 1955, high wint mortality of borers occurred in ce tral, north central and east centr counties. Highest populations th past season were found in south ce tral areas of the state. No new di tribution was recorded in Kans during 1955.

Corn rootworm was considerab lower than the two previous yea and was considered of little econom importance. During early summe moderate to severe infestations corn leaf aphid were prevalent milo fields in central and southwes ern counties. Greenbugs were not



MEXICAN BEAN BEETLES LOCATED—The above map showing distri tion of Mexican Bean Beetle in the U.S., was prepared by the Economic Ins Survey Section, Plant Pest Control, Agricultural Research Administrati U.S. Department of Agriculture. It is compiled from state reports recei to February, 1956. Circles in California and Idaho are areas where local festations were found in recent years, but eradicated.

nomic importance during the past
r. English grain aphids were light
h only a slight buildup in a few
ds of wheat in east central Kansas.

Fall armyworm appeared in most reas of the eastern half of the ate by mid-July. Light to moder- e infestations were present and used feeding damage and corn r-drop in localized areas of north- stern counties. Statewide loss as less severe than in 1954. Corn llbugs were again destructive corn planted in reclaimed river ottom land along the Missouri iver in Doniphan and Wyandotte unties.

False wireworms have begun to ild up over the western half of the ate. With continued drouth, they expected to increase and may er a major threat to milo and eat in coming years. Beet leaf- ppers were of little economic im- rtance to beet crops of south- stern Kansas.

European corn borer populations eraged about the same as 1954; wever fewer overwintering larvae re found during the fall survey. tual crop loss from borer activity s less than that of 1954.

Heaviest populations were found in oniphan and Atchison counties in e northeastern corner of the state. festations continue in the Kansas iver Valley and in northeastern rn Belt counties.

Wheat head armyworm appeared economic numbers for the first me in several years. Larval feed- g activity reduced wheat yields in veral areas in central, south cen- al and southwestern counties.

weetpotato Weevil n Five New Counties

WASHINGTON — Sweet potato eevil infestations were found dur- g January for the first time in e Georgia counties, according to e Cooperative Economic Insect Re- rt issued by the U.S. Department Agriculture. The counties are eckley, Dodge, Harris, Pulaski and roup.

Delimitation has revealed only nine fested properties in the five coun- es. Calhoun County, Florida, was und infested with the sweet potato eevil for the first time since 1943.

Winter Grain Mite

COLLEGE STATION, TEXAS — potted heavy populations of winter rain mite are reported in many fields small grain in Denton, Cooke, rayson, Fannin, Hunt, Navarro, alls and McLennan counties in exas.

Nitrogen Meetings Set n South Carolina

CLEMSON, S.C. — Three district eetings have been planned in South arolina to give farmers, agricultural orkers and interested commercial eople the latest information on the e of new forms of nitrogen.

According to M. C. McKenzie, agri- ultural engineer, Clemson Extension ervice, these meetings will begin at e Edisto Experiment Station, Black- lle, on March 6. At these meetings gronomists of the South Carolina xperiment Station and of several itrogen fertilizer companies will de- ribe the uses of anhydrous ammonia d the several nitrogen solutions. e various types of equipment for ndling these materials for both roadcast coverage on grain and pas- res, as well as for preplanting and de-dressing applications will be own and their operation explained.

The other district meetings are anned for the Pee Dee Experiment ation, Florence, March 7 and the emson Experiment Station, Clem- n, March 9. All meetings will start mptly at 1:30 p.m.

Mr. McKenzie said that before the l of 1956 there will be close to dozen dealers handling these ma- ials in South Carolina.

ESCAMBIA BAY

(Continued from page 1)

nificance of the new industrialization of the state, pointing out the rising trend of population in Florida. He commended the Escambia Bay Chemical Corp. for its confidence in the agricultural future of the area.

In charge of the dedication ceremonies at the plant was Kenneth G. Donald, Cambridge, Mass., president of Escambia Bay Chemical Corp. Also with him on the speakers' platform were other officers of the company as well as officials of the three parent firms, United Gas Corp., Shreveport, La.; Electric Bond & Share Co., New York, and the National Research Corp., Cambridge, Mass.

Rep Sikes was principal speaker at the dedication ceremonies. He reiterated the appreciation of the people of the Pensacola area for the establishment of this manufacturing facility. With Sen. Smathers, he pulled the cord which unfurled the company flag to signify the completion of the ceremonies.

David J. Stark, vice president and plant manager of the plant, told about how the organization of the company came about in 1954 and reported that the new facility is presently employing about 200 persons, with an annual payroll of approximately a million dollars.

The plant was erected by Chemical Construction Corp., New York, in only eight months, Mr. Donald reported. He said that the work required the services of 200 technical personnel and some 700 other workers.

An important sidelight on the construction of this plant was the virtual nonexistence of accidents to construction workers. As a matter of record, there was just one lost-time accident in a total of ¾ of a million man-hours worked.

The plant employs the Haber-Bosch method of making ammonia, produces 200 tons per day of anhydrous ammonia, 220 tons of 100% nitric acid (as a 56% water solution), 275 tons of 100% ammonium nitrate and 350 tons of prilled ammonium nitrate.

Water is obtained from three wells, each with a capacity of a thousand gallons per minute.

Company personnel, in addition to Mr. Donald, president, and Mr. Stark, vice president and plant manager, includes A. J. Bruno, chief engineer; Ralph M. Brown, general plant superintendent; John H. Heckert, ammonia plant superintendent; E. M. Spurlock, personnel director; William R. Moore, purchasing agent; D. L. Brooks, traffic manager, and E. L. Stokes, office manager.

WEED PROGRAM URGED

DENVER—The Colorado Association of Soil Conservation Districts has gone on record urging a vigorous program for control of noxious weeds.

Why D-D® is becoming increasingly important in nematode control

Outstanding performance in all growing areas on a wide variety of nematode species—*plus* timely national advertising and merchandising make D-D the soil fumigant to push for bigger '56 profits.

More growers than ever before are realizing the benefits of soil fumigation. Many of these growers are using D-D . . . the soil fumigant proved effective in hundreds of tests and over years of commercial usage. Make sure you are getting your share of these profits by stocking, recommending, and selling D-D.

Your customers will find D-D easy to apply. One economical pre-plant treatment with simple tractor attachment or gravity flow plow equipment gives effective control for an entire growing season. The cost of D-D is repaid many times in increased yields of better quality crops.

Customers can apply D-D in the spring before planting or in the fall after harvest . . . whichever time is more convenient. With nematode control taken care of early, growers have more time for other jobs.

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- Control of root knot and other nematodes
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Make bumper profits this season by recommending and selling D-D to your customers. It's the soil fumigant proved effective on thousands of acres of crops . . . you can recommend it with confidence. Technical information on D-D and its application is available from:

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AGRICULTURAL CHEMICALS DIVISION
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SHELL

TENNESSEE DEALERS TOLD

Increased Efficiency Key to Successful, Profitable Farming

KNOXVILLE—Increased efficiency is the key to successful and profitable farming, and is a partial solution to the mounting farm problem, according to Dr. W. H. Garman, chief, agronomic relations, National Plant Food Institute.

In an address to some 400 fertilizer and seed dealers and professional agricultural workers attending meetings in Tennessee recently, Dr. Garman explained that "efficiency of production" seems the most probable way of combating the present farm problem.

"In no previous period in our recent agricultural history has the actual position of the farmer been more unfavorable with respect to the remainder of our economy," stated Dr. Garman. He compared the 5% drop in farm prices to the 2% decline in retail food prices. Also, the farmers' share of the food dollar has dropped 25% in 10 years—from 53¢ to 39¢.

Dr. Garman presented figures showing that the total net farm income has also dropped, and to "the tune of over a billion dollars." This occurred in just one year—1955. A drop of 6.2 billion dollars, or about 60%, has occurred since 1947.

He commented that most economists and agronomists know that if the average farm is to return a fair profit in 1956, even more efficient production practices must be employed. Many of our farmers already know this, while others are learning, and in a hurry.

"More of the farmers' income is being spent for fertilizer than ever before," Dr. Garman said. He presented U.S. Department of Agriculture figures showing that in 1954 farmers spent 51% more for fertilizers and lime than they averaged during the 1947-49 period, whereas their expenditures for all other production goods and services increased by only 16%.

"It is only too well known by progressive farmers that fertilizer is perhaps their single most important ingredient for success in programs aimed at high levels of production," he said.

Dr. Garman quoted data from Stanford Research Institute which pointed out the 87% increase in the farm crop production index from 1920-50. The Institute concluded that "fertilizer has been the single factor most responsible for this improved efficiency. Farmers will continue to use fertili to maintain productivity and esp ally to compensate for the rising co of production as well as rising cos commodities and services they p chase."

Looking to the future, Dr. Garm predicted that use of fertilizer in g eral will continue to increase. By further breakdown, he showed t anhydrous ammonia accounted for proximately one third of all nitrog applied directly to the soil in 19 It will continue to have a place amo the top nitrogen fertilizers

Urea has great potential as source of nitrogen, he said. Abo 75,000 tons of nitrogen in urea fo will be available for agricultural u during the current fiscal year.

The production of diammoni phosphate, containing 21% nitrog and 53% available P_2O_5, is increasi This material is completely wa soluble, and may find a growing d mand for liquid fertilizer producti

Ordinary superphosphate will co tinue to be our major source of ag cultural phosphorus, but the propo tion of more concentrated sourc will see an increase year by ye Dr. Garman said.

"A few years ago," Dr. Garm said, "our potash came almost e tirely from foreign sources. But tod more than 90% of our potash com from a native source."

Liquid fertilizers are gaining co siderable ground in the Far West a Southwest, and use should increa even more as new liquid manufa turing plants are built in other se tions. Also, more satisfactory appl cation equipment is now being ma available.

World consumption of fertilizer h greatly increased, but Dr. Garma thinks there will continue to be a su plus of fertilizer materials. Produ tion plants are going up in oth countries at a rapid rate.

Dr. Garman predicted, "wate will be our most critical shortag 60 or 70 years from now." Wate is becoming more and more of problem, and we're losing lots o our good land at a pretty rapi rate, too. he said. He contended th "soil bank plan" should aid in con serving some of our deminishing natural resources.

Dr. W. D. Bishop, associate agron mist, University of Tennessee, pr sented experimental data showing th value of lime. He pointed out th need for wider use of lime in Tenne see and the Southeast. "To recei the full benefit from the applied fe tilizer," Dr. Bishop said, "lime needed to make the plant food n trients more available."

He urged the fertilizer dealers explain the benefits of liming farmers and assist them in gettin the material.

Dr. Webster Pendergrass, chair man of the fertilizer-seed dealer meetings, supported Dr. Bishop. H said, "we are using 135,000 lb. o plant food in Tennessee at present but we could use up to 435,000 lb and still get good returns from every pound of it. And the use o lime and fertilizer are so closely tied together that it would be im possible to separate them."

The seed situation and outlook f 1956 was discussed by Lewis Dicks associate agronomist, University Tennessee. In general, he expects t supply of seeds to be somewhat ple tiful and the price lower than in 195

This year's fertilizer-seed deale meetings were the most successf ever, according to L. N. Skold, hea University of Tennessee agronom department. Plans for next yea meetings are already being made.

JOIN MCA

WASHINGTON — Escambia C Chemical Corp., Cambridge, Mas has joined the Manufacturing Chem ists' Assn., that organization a nounced here recently.

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Benjamin H. Danziger

Benjamin H. Danziger Appointed Climax Advertising Manager

NEW YORK — Benjamin H. Danziger has been appointed manager—advertising and promotion of Climax Molybdenum Co., it has been announced by Reuel E. Warriner, vice president—sales. He was formerly manager—catalyst and pigment development.

Mr. Danziger, who is assuming his new duties immediately, joined Climax in 1952 as assistant budget officer. In 1954, he was assigned to the chemical market development position he held until his present promotion.

Mr. Danziger's other industrial experience includes three years with the Ruberoid Co. as a research and development engineer and production supervisor.

A 1948 chemical engineering graduate of Massachusetts Institute of Technology, Mr. Danziger also studied Industrial Management at Rutgers University and earned an M.B.A. degree in 1952 from Harvard University Graduate School of Business Administration.

American Cyanamid Sales, Earnings Rise

NEW YORK—American Cyanamid Co., producer of chemicals and pharmaceutical products, has announced its operating results for 1955.

Consolidated net sales for 1955 were approximately $451 million, about 13% greater than the $397 million for 1954.

Earnings before tax approximated $74,714,000 as compared with $51,050,000 reported for 1954. Related income taxes were $36,000,000 and $24,000,000 respectively so that consolidated net earnings were $38,714,000 for 1955 against $27,050,000.

After deducting dividends on the preferred stocks ($2,144,000 for 1955 and $1,310,000 for 1954), net earnings applicable to the common stock were $4.07 per share on 8,994,130 in 1955 and $2.95 on 8,722,921 for 1954.

Financial statements, as certified by independent public accountants, will be included in the Annual Report to be released the forepart of March.

KANSAS STATE APPOINTMENTS

MANHATTAN, KANSAS—The board of regents has approved the appointment of Glenn H. Beck as director of the Kansas Agricultural Experiment Station and of C. Peairs Wilson as director of the Kansas State College School of Agriculture. Mr. Beck is head of the dairy husbandry department at the University of Maryland. Mr. Wilson has been acting director of the Kansas State School of Agriculture and assistant director of the experiment station.

Atlas Production, Sales Set Record

WILMINGTON — Production and sales of chemicals and explosives in 1955 were the highest on record for Atlas Powder Co., Ralph K. Gottshall, president, stated Feb. 20 in the annual report to stockholders.

Sales and operating revenues from all products totaled $60,340,583, up 4% from the $57,647,346 reported in 1954. The sales increase was registered despite the disposition in the spring of 1955 of the company's industrial finishes department, with plants at Stamford, Conn., and North Chicago, Ill.

Net earnings totaled $3,480,469, an increase of 31% over the $2,643,404 earned in 1954.

The 1955 earnings equaled $4.70 a share on the 727,526 common shares outstanding at the end of 1955. The 1954 earnings equaled $4.05 per share on the 589,212 common shares outstanding at the close of that year. Earnings for 1955 were reduced by 33¢ a share due to flood damage last August to the company's Pennsylvania explosives plants.

The report notes that $1,487,000 was spent in 1955 on chemical and explosives research and development, compared with $1,256,000 in 1954. Expenditures on these activities in the 1951-1955 period were 64% higher than in the preceding five years.

Reorganization of the Atlas headquarters and field sales staffs, the report states, is expected to result in more aggressive development of business in the textile, plastics, agricultural chemicals and other promising fields.

Herbert J. Ploch in Technical Sales Service Post with Monsanto

ST. LOUIS—Herbert J. Ploch, a research chemist for Lion Oil Co., a division of Monsanto Chemical Co., has transferred to the company's Organic Chemicals Division to perform technical sales service in behalf of the recently-launched line of Monsanto farm chemical formulations.

Mr. Ploch's new assignment in the farm chemicals section of the division's agricultural chemicals department will include instructing distributors of Monsanto farm chemicals on the uses of Randox, trademark for the company's new grass-selective weed killer. The new herbicide is being offered this year to seed corn and seed soybean growers pending final clearance for use on food and feed crops.

He will also handle technical service projects for other Monsanto farm chemicals, operating from the division's headquarters in St. Louis.

A native of southwestern Texas, Mr. Ploch was graduated from Texas A&M in January, 1949, with a B.S. degree in chemistry. He joined Lion Oil Co. at El Dorado, Ark., in May of that year as a research chemist doing both product and pure research on herbicides, and, subsequently, fertilizers.

Wilbur-Ellis Co. Adds Two to Staff

PORTLAND, ORE. — Appointment of two new men to its local staff is announced by Wilbur-Ellis Co., Portland.

They are Francis Kopp, a recent graduate of Oregon State College, who majored in agricultural economics and Marvin Frymeyer. Mr. Kopp will take over the foreman duties at the firm's fertilizer plant at 1038 N.W. 13th Ave., and Mr. Frymeyer will work in the office accounting detail to permit Gordon Hedman to devote more of his time to outside sales work.

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Here's borax at the lowest cost per unit ... it's FERTILIZER BORATE with higher analysis and lower unit cost. The high boron content of this product is readily available in a form ideally suited to agricultural requirements. You'll blend the FINE MESH with other plant foods for borated fertilizers and offer the COARSE MESH for direct applications.

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FERTILIZER BORATE—High Grade, because of its higher analysis ... and lower moisture content (5 mols) ... saves you important money. In formulating mixtures containing borax, only 82.9 lbs. of FERTILIZER BORATE-High Grade are required for each 100 lbs. of Borax that you guarantee. You figure the savings!

13.6%

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44%

Other Borates

COLEMANITE-High Grade...a slowly soluble lime borate for light and porous soils, or in regions of high rainfall. Content of B_2O_3 ranges from 32% to 35%. *Bulletin PF-2.*

POLYBOR-2...Highly soluble. Contains 20.5% Boron or 66% B_2O_3. Applies as a spray or dust; compatible with insecticides and fungicides currently in use and may be applied in the same solutions. *Bulletin PF-4.*

PACIFIC COAST BORAX CO.

MECHANIZATION CONFERENCE

(Continued from page 1)

members were M. D. Sanders, Swift & Co., Chicago; R. B. Ellsworth, Ellsworth Equipment & Engineering Co., Indianapolis; J. D. Cook, Illinois Farm Supply Co., Chicago, and A. J. Ohlrogge, Purdue University, Lafayette.

Mr. Sanders discussed solid fertilizer from the standpoint of its physical state with respect to its distribution by machinery. Moisture content offers few problems any longer, he said, although hydroscopicity—no problem in bagged material—can be a bother if bulk movement is involved. The wide range in particle size can be an important factor, he said.

A report on liquid fertilizer was given by Mr. Ellsworth. He said that machinery for handling it, since it is relatively new, has been similar to rather crude plumbing. Steady progress is being made, however. He showed slides of various types of applicating equipment.

Mr. Cook foresees that bulk spreading will replace do-it-yourself fertilizer application. In some areas, he pointed out, it is as economical for a farmer to have the fertilizer bulk spread than to order it and then apply it himself. There still is room for row application, he said, even if bulk spreading increases.

Mr. Cook warned bulk applicators that they should charge on a ton basis rather than by the acre, since frequently there is a misunderstanding about the size of the plot to be fertilized. He also said that a low level of application should be avoided, since he believes farmers lose more by a too-low level than a too-high one. A minimum of 200 lb. to the acre should be observed, he said.

Mr. Ohlrogge strongly urged that fertilizer placement equipment put the fertilizer where it will do the most good. It should be placed low enough and in the proper position for giving an early start and interception by the root, he said.

The first panel was replaced by another made up of industry members. They were plied with questions previously submitted, and later questioning from the audience was permitted. Panel members were Vincent Sauchelli, Davison Chemical Co. Division of W. R. Grace & Co., Baltimore; George Scarseth, American Farm Research Assn., Lafayette, Ind.; R. P. Thomas, International Minerals & Chemical Corp., Chicago, and George E. Smith, University of Missouri, Columbia.

Q. What are some simple changes which will improve fertilizer equipment?

Mr. Smith—Much can be done in this respect. Here are a few changes:

1. Enlarge the fertilizer boxes on the equipment and take the sharp edges off.

2. Lower the boxes so bags of plant food can be lifted to the boxes.

3. Build machinery to place the fertilizer where it is needed.

4. Develop machinery which will let fertilizer be applied during another operation.

Q. How uniform is the flow of granular fertilizer?

Mr. Sauchelli—The flow of fertilizer has improved greatly in the last few years, and equipment manufacturers now can take advantage of this characteristic and devise equipment which will permit precision application.

Q. Concerning the pattern of fertilizer, should it be broadcast as opposed to row application?

Mr. Scarseth—Both methods should be employed for best results. Row application should be used at the start, with broadcast later. Improvements are needed in row applicators.

Q. What are the possibilities of combining operations and machinery to eliminate processes and cut costs?

Mr. Smith—This must be done and the sooner the better. Machinery packs the soil, and tools must be developed to cut tillage operations to a minimum. A universal hopper is suggested to be placed on the tractor, with a method to carry the fertilizer or other material back to the applicating instrument.

Q. What are the factors favoring liquid and solid fertilizers?

Mr. Sauchelli—The cost of storage of liquid fertilizer must be considered. It is applied over a period of a few weeks and this means expensive storage tanks for most of the year are unnecessary. Dry fertilizer storage is taken care of by the manufacturer, and bags store without special space or handling. Dry fertilizer manufacturers are set up to deliver in a hurry in the few weeks needed in the spring at no extra cost. This constitutes a big service.

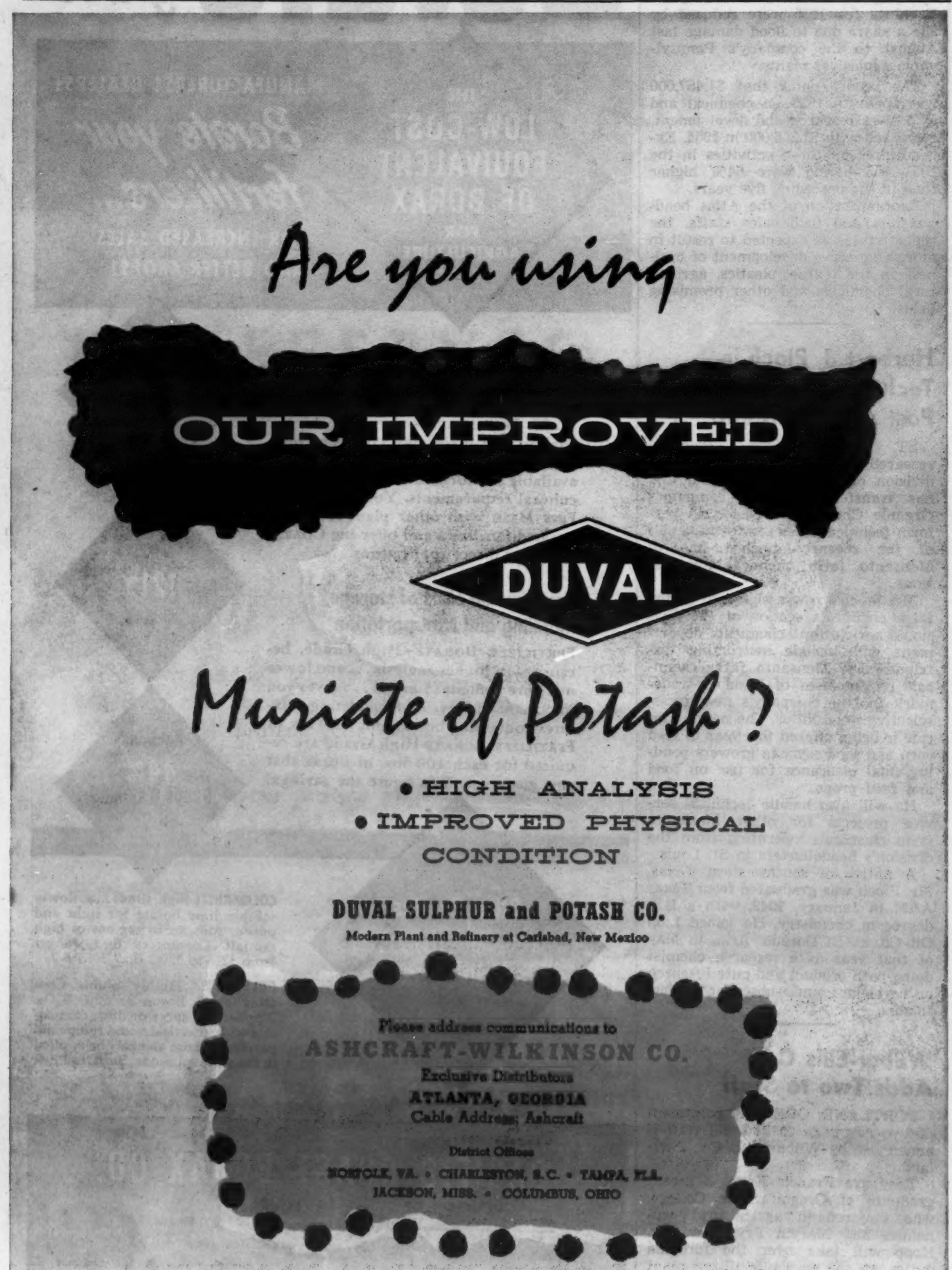
Mr. Thomas—Dry fertilizer manufacturers must look to their laurels on the service angle. Liquid fertilizer lends itself to more and better services. It also can afford a faster rate of application. Dry fertilizer makers must search for better ways to be of service to the grower.

Mr. Smith—It is difficult to say which product will be more important in the next five or ten years, but it appears both will be around. Which gains the greater percentage of business probably will be the one working harder. Liquid now offers the greater edge in labor saving.

Mr. Scarseth—Farmers are looking at all angles. All types of fertilizer have a place, and the one offering a producer the best deal for his particular needs will get the business.

During the open question and answer period, most of the inquiries dealt with the relative importance of liquid and solid fertilizers. Some panel members agreed that there is very little difference in the cost when the application is taken to completion.

Mr. Smith said he has conducted an experiment which has dealt with the relative costs for the last year. And, while one year's work is inconclusive, he feels that from the cost standpoint, he would buy the type of fertilizer which costs less per unit of plant food and was the least difficult to apply.



Special Retail Section

Better Selling

Richer Fields for Dealers

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

Arkansas Anhydrous Dealers Advised To Sell Balanced Fertilizer Program

LITTLE ROCK—G. E. Davis of Lepanto, Ark. was elected president of the Arkansas Anhydrous Ammonia Dealers Assn. at the fourth annual statewide meeting held at the Hotel LaFayette in Little Rock Feb. 13. Mr. Davis, who succeeds Donald D. Wood of Helena in the presidency, was secretary-treasurer of the association in 1955.

Other newly-elected officers are George Dunklin, Pine Bluff, vice president, and W. O. Hazelbaker, Jr., Stuttgare, secretary-treasurer.

Newly-elected members of the board of directors are William DeYampert, Wilmot, Ark., and Mr. Dunklin. Directors whose terms will continue through 1956 are W. O. Melton of Trumann, M. O. Raspberry of Helena, Mr. Hazelbaker and Mr. Davis. Retiring members of the board are Hampton Pugh of Tillar, and Woodrow Castleberry of Newport.

About 200 dealers and distributors attended the one-day meeting and participated in a technical program.

Dr. R. L. Beecher, agronomist of the University of Arkansas, urged careful consideration of the needed balance between other elements of fertilization in order to get maximum benefit from anhydrous ammonia applications. Speaking on the subject, "Higher Yields Require Nitrogen Plus," Dr. Beecher pointed out the need to balance potash, phosphate and lime on the basis of preliminary soil tests, in order to give the farmer the greatest return from his investment in anhydrous ammonia.

Dr. Beecher also reminded the dealers that stepping up the nitrogen factor in a farm operation may be a complex problem, in which insect control must be watched among the other altered factors.

Soil tests have proved to be correct 70% of the time, when compared with production records, he said, and in the varying soil conditions of different sections they are valuable and economical in the long run.

He also urged the dealers to work with their customers in understanding the long-range effects of nitrogen applications when special weather conditions, such as a prolonged drouth, carry the full effect of the application over into the following crop year. Many farmers do not understand that a great deal of the benefit from extra nitrogen applied in a dry year is realized a year later, Dr. Beecher said.

Application of nitrogen at the recommended rate for the particular type of soil involved and careful balance of other elements in the fertilizers chosen will mean high production records and satisfied customers the following season, he told the group.

Other speakers and their subjects included Dr. Paul J. Talley, agronomist for the Lion Oil Co. Division of Monsanto Chemical Co., El Dorado, Ark., who spoke on "The Future of Nitrogen in Arkansas," and Douglas Johnston of the John Blue Co., Huntsville, Ala., who spoke on "Flow Characteristics In The Transfer of Anhydrous Ammonia."

Dr. F. E. Boyd, agronomist of the Virginia-Carolina Chemical Corp., Montgomery, Ala., spoke on "Soil Testing and Fertilizer Grades," and Jack Criswell, executive vice president of the Agricultural Ammonia Institute, Memphis, spoke on "The Present Situation and Outlook for Anhydrous Ammonia."

M. L. Blair, chief boiler inspector of the State of Arkansas, Department of Labor, spoke on "Proper Maintenance of Equipment and Safety."

Need for Balanced Fertilization Cited

LEXINGTON, KY.—Results of experiments throughout Kentucky show the necessity of balanced fertilization if crops are to be produced efficiently, according to Prof. E. C. Doll, in a talk at Farm and Home Week at the University of Kentucky.

Each of the three major soil elements of nitrogen, phosphorus and potassium must be applied at a rate which will give the maximum profitable return, he said. In a fertilization program, enough phosphorus should be included to maintain an adequate level of available phosphorus in the soil and, in addition, sufficient nitrogen and potash should be applied for the immediate needs of the crop.

SHOP TALK OVER THE COUNTER FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

Possible income tax deductions for a farmer include the cost of mixed fertilizer, nitrogen and similar items. Also included are the expenses of mixing fertilizer and feed.

Generally, farmers refertilize for each crop (or even during the growth of a crop) and the expenses of raising the crop are current deductions, reminds a farm income tax booklet prepared by the Nitrogen Division of Allied Chemical & Dye Corp. This is an example of how the government shares the farmer's cost of increasing his income via a tax deduction for additional fertilizer used to increase his crops, the booklet states.

Likewise deductible are insecticides, lime and such soil and water conservation expenses as contour furrowing, leveling, grading, terracing, water courses, ponds, eradication of brush and earthen dams. Spray materials, poisons, disinfectants, cans, barrels and similar items are also deductible. Development costs, under certain conditions, are tax deductible. These may include drilling and equipping of wells, laying irrigation pipes, installation of drain tile to prevent erosion and cost of taxes and water for irrigation purposes.

Liming may benefit the land for several years. If that is true, the farmer must spread the cost over the years benefited. However, if the land gets greater benefit in the earlier years, the Treasury says the farmer can spread the cost over the benefit period at a declining rate.

Alert farm chemicals dealers can usually find the opportunity in their conversations with farmers to remind them of the tax deductions available when fertilizer, lime, insecticides and other similar materials are purchased and used. It is, of course, not the prime motive for promoting soil nutrients and pesticides but it is certainly one to keep in mind when talking with farmers.

Nitrogen Division of Allied Chemical & Dye Corp. has provided a fine service to farmers by making the tax booklet available through dealers. The booklet is entitled, "How to Save Money on Your Farm Income Tax" and was written by J. K. Lasser, the well known tax authority. Dealers who are interested in seeing the booklet may drop a note to this department and their request will be forwarded to Nitrogen Division's headquarters.

A Welcome Visitor

Croplife entertains many "visiting firemen" from time to time, in its offices and plant at the west edge of Minneapolis. Last week, our caller was Prof. C. J. Chapman, University of Wisconsin soils expert who is known far and wide as an outspoken advocate for the use of more and more nitrogen. After meeting various members of the editorial staff and looking in on the mechanical department, Prof. Chapman relaxed awhile in the company's Club Room before a glowing fireplace and began to reminisce about his own past connection with the Minneapolis area.

It seems that he formerly lived in a suburb not far from the present location of Croplife's offices and much of the surroundings seemed familiar to him. He took a brief tour around the community, recalling bygone days that bring up memories of model "T" cars; unimproved roads; wide open areas now thickly populated; and his early "preaching" of the virtues of nitrogen in agriculture.

JOHNSON GRASS CURB

LOUISVILLE—Two measures have been introduced in the Kentucky legislature which would require the state highway department and county engineers to curb Johnson grass growing on road rights-of-way.

By RAYMOND ROSSON
County Agent, Washington County, Tenn.

Every plant comes through the crust hungry, and it is the farmer's duty to see that they are well fed. The boy has the world to furnish sustenance; the animal has the field; the plant has only one spot, and if that one little spot hasn't "it," the plant is out of luck.

Plant food is the capital stock of the farmer, and when it is gone his business of farming is gone. Without plant food the grocery shelves would be empty.

Methods of treating the soil changed little from the time of the Pharaohs in Egypt, to about 100 years ago. The first nitrate of soda was imported in 1830. In 1840 bones were treated with sulphuric acid, making the phosphate more available. In 1842 the first superphosphate was made and in 1845 the value of potash salts was discovered. The first fertilizer experiment was begun at State College, Pa., in 1872.

Plant food, plus toil, plus brains give a homestead its value. No crop can be grown at a profit where land is exhausted under a system that takes away the fertility and nothing is returned in the form of plant food.

Nitrogen is absolutely essential, for the growth and reproduction of both plants and animals, and all life would cease to exist without it.

Phosphorus has sometimes been called the master key to agriculture. Adequate amounts of available phosphorus in soils favor rapid plant growth and development; hasten maturity or fruiting and improve quality.

Potash insures the development of well-filled kernels and gives stiffness to the straw, and especially encourages the growth of legumes.

Soils full of balanced plant food, mean groceries full of nutritious food.

Casebearer Control Program Pays Off

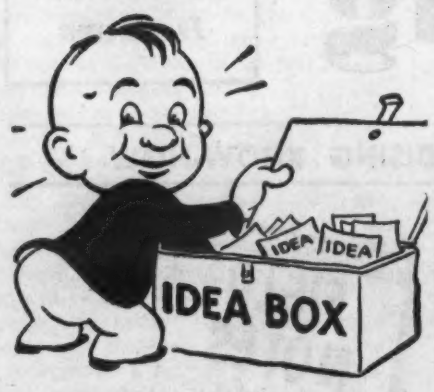
COLLEGE STATION, TEXAS—A program of spraying for control of casebearers in pecans paid off in Guadalupe County, Texas in 1955. The program was set up through the office of Henry New, county agent, at the request of growers.

Hugo Pape and Wilson Schuessler, growers in the program, estimate that they lost not more than 5% of their pecans to the casebearer. They were able to compare the sprayed trees with nearby trees that had not been sprayed. The most the unsprayed trees had was no more than a 50% crop. Some had less than 10%.

"We believe our crops were doubled through spraying," the two farmers said. It has been estimated that from 5 to 7 million pounds of pecans were lost in Texas to the casebearer in 1955.

Better Selling

Richer Sales Fields for Dealers



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6377—Granular Pesticides

The Minerals & Chemicals Corporation of America, Agricultural Chemical Dept., has available its new issue of Attaclay Pesticide Digest which covers pertinent points on the subject of granular pesticides. The entire issue is devoted to granular pesticides in general and granular pesticide applications for the European corn borer in particular. Specialized field application rigs for these materials are illustrated and various mesh classifications are shown in actual size. Of interest also is a chronolagy of the corn borer. The issue is available without charge. Check No. 6377 on the coupon and mail it to Croplife.

No. 6378—Surface Active Agent

A new anionic surface active agent known as Isomal 265 has been developed by the Johnson-March Corp., which states that it can be used in all kinds of chemical processes as a wetting agent, rewetting agent, penetrant, detergent and emulsifier. It is specially formulated to reduce processing time, increase processing efficiency and improve finished products, according to the company announcement. The fluid is described as a concentrated sulfonated ester type liquid. It is recommended as an emulsifier or dispersant in the manufacture of agricultural sprays and insecticides to give uniform and efficient coverage, the company claims. Clear in appearance, the product has a neutral pH factor and a specific gravity of 1.088 at 60° F. It is approximately 65% active and mildly pleasant in odor. It is available in 55-gal. steel drums. Secure more complete details by checking No. 6378 on the coupon and mailing it to Croplife.

No. 5395—Aluminum Conveyor

A new line of aluminum multipurpose conveyors called Ve-Be-Veyor has been announced by the Oliver Corp. The conveyors are equipped with ⅓ hp, 115 volt, single phase motors with reversing drum control and power drive, gear reduction unit. No pulley adjustments are required at either end of the conveyor, the manufacturer says. A new "V-groove guide" principle is said

to keep carrying belts centered at all times, eliminating the problem of belt run-off. Three sizes available are 12 ft., 16 ft. and 20 ft., weighing 149, 192 and 235 lb. respectively. Uses suggested by the manufacturer include floor-to-floor operations, as boosters for gravity lines, for loading and unloading vehicles, for moving and stacking packages in stores, factories, warehouses or on farms. For complete information, please check No. 5395 on the coupon and mail it to this publication.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6370—Products Catalog

The Wil-Kil Pest Control Co. has produced a catalog describing its service, chemicals and equipment. Sections of the catalog are devoted to livestock insecticides, municipal insecticides and related chemicals, fumigants, weed and brush control products, wood preservatives, food plant insecticides and spraying equipment. Prices and shipping information is also available. Secure the literature by checking No. 6370 on the coupon and mailing it to Croplife.

No. 6375—Tarpaulins

Heavy-duty vinyl plastic tarpaulins for a variety of horticultural and agricultural uses, including steam sterilization of soil and preservation of silage, are being made and distributed by Larvacide Products, Inc. They are sold under the company's Larvacover trademark and fabricated from a special vinyl formulation. They are recommended for use as soil-fumigation covers, greenhouse-bench liners to permit double-decking, erosion preventives, irrigation-ditch liners and water-conservation aids. The product comes in heavy-duty and standa (4-mil) thicknesses. Standard ro are 100 and 150 ft. long and are ava able in widths of 6½ and 10 ft. Ho ever, the manufacturer will furni custom sizes on request. Hemm ends give the material better te resistance and make it easier to ha dle. All seams are made electronic ly. Two colors—clear and dark gre are available. Descriptive literatu is available by checking No. 6375 the coupon and mailing it to Cropli

No. 6373—Recordin

"The D-D Hop," a new "sca tune, has joined "Boll Weevil Blue and "Corn Huskin' Blues" in Sh Chemical Corporation's music librar Designed essentially as a commerci to accompany the firm's 26-we sponsorship of the noon weather sho over the Tobacco Network in t tobacco belt, the tune has also be prepared as a full length popular r cording. While it entertains, it te the importance of soil fumigation a D-D's part in controlling nematode The recording features Julie Conwa and the Nelsonics, backed by a 6-ma musical group. People who want use the platter can secure it h checking No. 6373 on the coupon a mailing it to Croplife.

No. 5383—Hydraulic Lift

The Crown Controls Co., Inc., ha announced features of its new E- lift (model LT-1000) 1,000-lb. capa ity hydraulic lift for use where lim ited space is a problem. The lift for one-man operation and has push-pull handle which operates th hydraulic mechanism located at convenient height on the lift. Load can be elevated to any height be tween 5¼ in. and 54 in. above th floor. The lift rolls smoothly on rolle bearing equipped rubber front wheel and roller bearing equipped swivel type rear casters. The positive-actio brake is foot operated and has a trig ger release. The lift is equipped wit a safety overload release which re fuses loads of more than 1,200 lb Constructed of strong tubular stee the lift is 64 in. high, 24½ in. wid

and 35 in. long. It weighs 270 lb. Th safety plate platform is 24 in. by 24 in. Straddle capacity is 16¼ in Secure more complete details b checking No. 5383 on the coupon an mailing it.

No. 5384—Sales Brochure

A new sales management brochure "Who's Selling Who?" is being mad available by Cappel, MacDonald Co. The brochure emphasizes th theme, "getting men to sell." In th foreword can be found the followin phrase: "Fact No. 1. Salesmen an salesmanship are not perfect. (Wha is?). Fact No. 2, Sales, salesmanshi and salesmen can be improved." It

Send me information on the items marked:

- ☐ No. 5383—Hydraulic Lift
- ☐ No. 5384—Sales Brochure
- ☐ No. 5387—Wall Products
- ☐ No. 5395—Conveyor
- ☐ No. 6370—Products Catalog
- ☐ No. 6371—Duster Package
- ☐ No. 6372—Soil Insect Film
- ☐ No. 6373—Recording
- ☐ No. 6374—Handbook
- ☐ No. 6375—Tarpaulins
- ☐ No. 6376—Bulk Sales
- ☐ No. 6377—Pesticide
- ☐ No. 6378—Surface Active Agent

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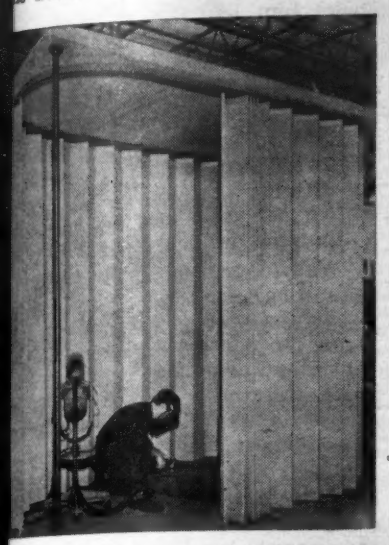
plained further that the criticism ered is meant to be friendly and lpful to open the door, at least par- lly, to the room for improvement at exists. Secure the brochure by ecking No. 5384 on the coupon and ailing it to this publication.

No. 5387—Wall Products

New developments in the use of all products manufactured by the ransWall Coated Products plant of e Bemis Bro. Bag Co. have been



nnounced. The new plant is manu- acturing and marketing the firm's roducts, called by the trade name, ransWall curtains, BemisWall cur- ains and Bemisorb. The TransWall urtain makes use of an "area" noise ontrol concept through the use of ight-weight retractable sound bar- iers, according to the company. In- tallations are being used in many lants both for anti-noise work and or draft control. BemisWall curtains re a type of folding door or parti- ion for general application in offices nd other establishments. Bemisorb s a line of coated fabric for a broad ange of industrial and technical ap- lications. To secure more complete etails check No. 5387 on the coupon nd drop it in the mail to this publi- ation.

No. 6372—Soil Insect Film

"Corn's Hidden Enemies," the film tory of one corn farmer's successful ight against soil insects, is being eissued free of charge to county agents and other farm leaders by the Shell Chemical Corp.

The film deals with the soil insect problems of a Danville, Iowa, corn farmer named Howard Waters, and the measures he took to save his crop. In the movie, Mr. Waters calls on the local county agent for help in his fight against the underground pests which are ravaging his fields. The agent, in turn, asks advice from Iowa State College where entomologist John H. Lilly suggests that a chemical insecticide be used. Mr. Waters follows the entomologist's advice and applies aldrin to his soil and the film shows the results. When ordering, it is recommended that at least one alternate delivery date be listed. The film has a running time of 12 min.

No. 6376—Bulk Scales

A 2-color, 6-page bulletin describing three models of the class 38 automatic weighing unit for bulk materials is offered by Richardson Scale Co. The bulletin states that "these heavy duty scales are designed for handling dry, ground, granular, dusty and non free-flowing materials." The bulletin discusses construction, operation, feeding arrangements and capacities for the scales. Gravity, belt, screw and vibrating feed arrangements are shown in diagram. Special features such as hopper door flapper, locking gear, automatic compensation mechanism and automatic tabulator are described and illustrated. A complete line of accessory equipment, including a pneumatic gate assist, resi-due beam, remote electric counter, and agitators is discussed. A list of over 120 materials that the class 38 has handled effectively is included. Secure the bulletin by checking No. 6376 on the coupon and mailing it to Croplife.

No. 6374—Fertilizer Handbook

The soil improvement committee of the California Fertilizer Assn. is offering its "Western Fertilizer Handbook," now in its second edition, for $1 per copy. Orders may be sent directly to the California Fertilizer Assn., 475 Huntington Drive, San Marino 9, Cal. Called a reference work of interest to all persons interested in soil fertility and plant nutrition, the handbook contains 160 pages and features 12 color plates, most of which depict plant food deficiency symptoms. Many black and white illustrations and a glossary of tables, terms and conversions are also included. Single or multiple copies may be obtained for $1 each.

No. 6371—Duster Package

"Whiff'n poof" describes the action, appearance and the sound of a new squeeze duster package for Du Pont garden dusts. The Du Pont spokesmen said one squeeze of the flexible package sends a puff of dust far into a mass of foliage. Four of the company's garden dusts will be packaged in the package during the coming year. The new 8-oz. package is a cylinder of "Alathon" polyethylene resin, fitted with a directional nozzle to send the dust where it is aimed. Labels, lids and bottoms of the package are all "weatherproof" to keep the package serviceable through repeated re-fills, it is claimed. Du Pont insecticide-fungicide combinations to be available in the new container are rose insecticide and fungicide, floral dust, vegetable garden dust and tomato dust. Secure more complete details by checking No. 6371 on the coupon and mail it to this publication.

6,310-lb. Lint Cotton Yield High in Contest

CLEMSON, S.C. — With an official yield of 6,310 lb. of lint cotton produced on five acres, Wilson McDaniel, Carlisle, Chester County, is the state winner in the 1955 South Carolina Five-Acre Cotton Contest.

Second-place winner is Dave Cameron, York, York County. His official yield was 6,000 lb. of lint. Winner of the State Youth Agricultural Scholarship is Jimmy Wise, Johnston, Edgefield County. His yield was 5,785 lb. He is a freshman at Clemson.

There were 1,220 five-acre fields entered in the state contest in 1955 and records were completed on 885 of these fields. This record, both as to enrollment and completions, is one of the highest since the contest started in 1926. The average yield for the completed demonstrations was 684 lb. of lint cotton per acre, which is one of the highest annual per acre averages since the contest was started. The average per acre yield for 16,565 demonstrations completed during the 28 years of the contest is 594 lb. of lint.

TVA FERTILIZER USE

CLEMSON, S.C.—During the past several years 389 South Carolina farmers have received 3,770 tons of phosphate materials from the Tennessee Valley Authority. P. S. Williamon, farm management specialist for the Clemson Extension Service, reports that test-demonstration farmers have used 27% fused tricalcium phosphate, 48% triple superphosphate, and 61% calcium metaphosphate on 36,241 acres of permanent pasture, annual grazing crops, perennial legumes and annual legumes.

Farmers get more profit from fewer acres with

PHILLIPS 66

AMMONIUM NITRATE

A companion high nitrogen fertilizer for your mixed goods!

Phillips *66* Ammonium Nitrate is the right nitrogen fertilizer to use with quality mixed fertilizer. When they use Phillips *66* Ammonium Nitrate, farmers realize lower unit production costs . . . more profit per acre! They make more money with less work, less worry—and from fewer acres.

Phillips *66* Ammonium Nitrate is *guaranteed* to contain 33.5% Nitrogen: 16.75% Nitrate Nitrogen, 16.75% Ammonia Nitrogen. The new multi-wall polyethylene-lined bags assure a free-flowing, easy-to-use product.

Phillips advertises its high quality, high nitrogen fertilizers all year 'round in a comprehensive list of leading farm magazines. And, of course, you can always depend on Phillips for prompt, efficient service.

Now available in New Polyethylene-Lined 80 and 100 lb. bags

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OMAHA, NEB.—WOW Building
PASADENA, CALIF.—604 Citizens Bank Bldg.
RALEIGH, N. C.—804 St. Mary's Ave.
SALT LAKE CITY, UTAH—68 South Main
SPOKANE, WASH.—521 E. Sprague Ave.
ST. LOUIS, MO.—4251 Lindell Blvd.
TAMPA, FLA.—1214 South Dale Mabry
TULSA, OKLA.—1708 Utica Square
WICHITA, KAN.—501 KFH Building

A tall, dark haired salesman entered the fertilizer store. He was hatless and carried two brown briefcases. Oscar Schoenfeld recognized him at once as Jim Morris, and he stiffened instinctively.

Oscar had real reason to dislike Jim Morris, so he thought. In the first place, the fellow sold more insecticides to Pat McGillicuddy than Oscar thought he should, and this alone would have merited Oscar's dislike. But the young, hatless salesman also had the temerity to park his car close to the entrance of the store, that is, until Oscar in a moment of pique had gone outdoors and penned a note on the windshield saying that parking space close to the store should be saved for customers, not salesmen.

"Hello, Oscar," smiled Jim Morris as he came forward with his two briefcases.

Oscar said a muffled hello and went on with his paperwork. Just because Pat was not in, this salesman did not need to think he could play up to him and get an order. Oscar wouldn't buy anything from him, he resolved, not even if gypsy moths were flying all over the county.

"I see that you are saving rubber bands and paper clips," said Morris with a smile.

Oscar looked up hostilely. "And what's wrong with that?" he asked.

"Oh, nothing," said the salesman. "I think it's quite admirable. I said so when Pat told me about it. The man who saves will never go hungry or waste much."

Oscar looked up puzzledly and his cold glance inspected the young salesman. What was he driving at? Or was it just that he had some common sense, and it was showing up at last?

"I think everyone should have a hobby, and save things," Morris said, "and I have been thinking of you lately in that respect."

Oscar was suspicious once more, but said nothing.

"I thought maybe you would like to save something else in addition to paper clips and rubber bands," Jim Morris said, "So I brought some samples along."

Oscar's ears picked up. "You did? What?"

Jim Morris grinned. "Well, you know how it is in hotels where traveling salesmen stay. The management always puts out more of those little soap bars than a fellow can use. I picked up quite a few of them from various hotels I visited, and then I asked other salesmen of the company to pick up a few, too, for me."

He opened up his briefcase, upended it slowly on Oscar's desk and about 100 bars of soap slid out. Each was neatly packaged and each bore the name of the hotel from which it came.

"Nice, aren't they?" Morris grinned.

At first Oscar was going to make a sharp retort to the salesman for having the nerve to dump the soap samples on his desk, but then his thrifty mind began to work. Minnie and he could use these samples at home; they would not have to buy soap at the store. Minnie would like that, and the budget certainly would be helped. Then a nasty thought entered his mind.

"Of course it won't make any difference on my buying," he said. "I still believe in carrying a small stock —of everything. I'm not like Pat, loading up to the gills on everything."

A hurt look came into Jim Morris' brown eyes. "Why, of course not, Oscar. That wasn't my idea at all. I just thought you'd like to collect some soap samples. And some of my salesman friends will save soap samples for you, too. You'll maybe have some in a year or so from every section of the country."

Oscar had one more question to ask. "How about the hotels where these samples come from?" he said shrewdly. "That isn't stealing, is it?"

Jim Morris shook his head. "It certainly isn't. Now if a salesman walked off with a towel or two, or a blanket from the bed, that would be stealing I think. But the soap is put in the hotel room for a guest to use, and if he decides to forego too much washing, or too many baths and takes the soap home as a souvenir what's the difference? The soap is for him to use. The management doesn't care how it is used."

Oscar nodded thoughtfully. "Well, I guess you're right." He picked up one of the soap samples and smelled it. "Got a nice smell," he said. "Yes, if you have some samples, bring them around. Maybe I can use them."

Jim Morris had a big territory, covering several states. It was almost two months before he got back to see the firm of Schoenfeld and McGillicuddy again. This time, neither Oscar nor Pat was in. Only Tillie was on hand.

"Pat is out selling," Tillie said, "and Oscar—" she smiled, "he won't be back for three weeks."

"Oh," said Morris, "how's that?"

"He and his wife are on a trip to Florida, all expenses paid," Tillie said. "And it's all your doing."

"Mine?" said the surprised salesman. "How's that?"

"On account of those soap samples from hotels," Tillie replied. "They poured in here from many of your salesmen friends. When the newspapers heard about it, they came and wrote a story about Oscar's new hobby and took pictures of him holding some of the soap bars.

"Then he was interviewed by a radio station staff on his hobby. The next thing we knew they were after him for a television appearance during a 'Most Interesting Hobby' contest."

Morris asked delightedly: "Did they get him to do it?"

"They certainly did," smiled Tillie. "Both Oscar and Minnie went. Minnie helped hand Oscar the soap samples as he talked about the soaps and their odors. By that time he had studied many of them and knew where all the hotels were located."

"Then," laughed Tillie, "Oscar won the hobby contest—a two weeks trip to Florida, all expenses paid. He got mail from many of the hotels offering him free room and meals should he decide to visit them en route."

"Whew!" cried Morris. "What a hobby. And—and did Oscar and Minnie like the idea of going to Florida?"

"Not Oscar. He wouldn't go until Minnie begged him to, and only when Pat promised to collect delinquent accounts three times a week and send him a financial statement twice a week."

"He still had to watch the business, eh?"

Tillie nodded. "But you never saw such a change in a man. Oscar still stingy, but he walks around li an important man—like a gener who has received a medal. I think even talks sharper."

Jim Morris looked apologetic. never dreamed it would turn out li this, Tillie. I directed all those so samples Oscar's way, because thought it would interest him, a make him like me. I thought th maybe someday maybe I could g him to okay an order Pat gives, wit out cutting it to the bone."

Tillie smiled. "Maybe you've a complished something, Jim. I hea Oscar say to Pat just before he le for Florida that he should give yo a two per cent increase in norm volume on the next order."

"Well," grinned Morris, "that something, isn't it? Maybe afte Oscar has been going to Florida fo about ten winters—if I can think u that many new ideas to get him se there free, he will work up the in crease on my orders to eight or pe haps ten per cent."

Morris and Tillie both laughed s hard that tears rolled down thei cheeks at what it would take ove the years to pry Oscar loose from hi cutting the costs schedule—even jus a little.

612,929 Acres of South Carolina Cotton Treated for Insects, Disease in 1955

CLEMSON, S.C.—South Carolina farmers used 9,572 tons of dust and 68,904 gallons of concentrated spray in 1955 for cotton insect control, according to a summary of the state's cotton insect and disease control program prepared by L. M. Sparks, Clemson extension specialist.

These figures compare with 12,170 tons of dust and 123,355 gallons of spray used in 1954.

The following statistics are taken from Mr. Sparks' report:

An estimated 55,034 farmers in the state poisoned; 317,737 acres were poisoned one to three times and yielded an average of 331 lb. lint an acre; 163,044 acres were poisoned four to six times and yielded an average of 397 lb.; 76,979 acres were poisoned seven or more times, yielding an average of 475 lb.; 196,296 acres were not poisoned, yielding an average of 194 lb.

An estimated 104,578 acres were dusted, 26,699 acres sprayed and 42,973 acres defoliated by aircraft.

An estimated 30 lb. of dust per acre was used on 612,929 acres, with an average of three applications.

It is estimated in the report that 244,327 bales of cotton were lost in the state in 1955 because of insects, diseases and other problems. Total production was 571,765 bales, and potential production was 816,092 bales. Thus, it is estimated that loss from insects, diseases and other causes cut this potential down by 30%.

Losses from specific causes include 122,038 bales to boll weevils, 23,316 to bollworms, 5,323 to thrips, 14,154 to spider mites, 416 to aphids, 46,058 to boll rots, 5,828 to other diseases, 6,149 to drouth and heat and 21,045 to other causes.

Sesame Becoming Important Cash Crop In Parts of Texas

RENNER, TEXAS—Sesame is rapidly assuming the importance of a cash crop in many parts of Texas. In 1955 seven farmers in Ellis County, growing the Renner No. 1 variety, harvested 235,000 lb. of sesame seed from 290 acres of diverted land which could not be planted to cotton.

The farmers received 7¢ lb. for the seed and expect another two or three cents. If they get the full 10¢ lb., the gross income will amount to about $81 per acre. This may not be quite so much profit as on cotton, but it is several times more than that received for grain sorghums.

One of the growers, R. B. Rice, said the crop of sesame in 1954 helped enrich the soil. Cotton grown on the sesame produced better than where it followed cotton.

Sesame began gaining popularity when the Renner Foundation produced a shatter-proof plant that could be harvested without waste. It is well suited to most parts of Texas, and can be grown with little cultivation and in a relatively short time.

Fertilizer Profitable In Grape Production

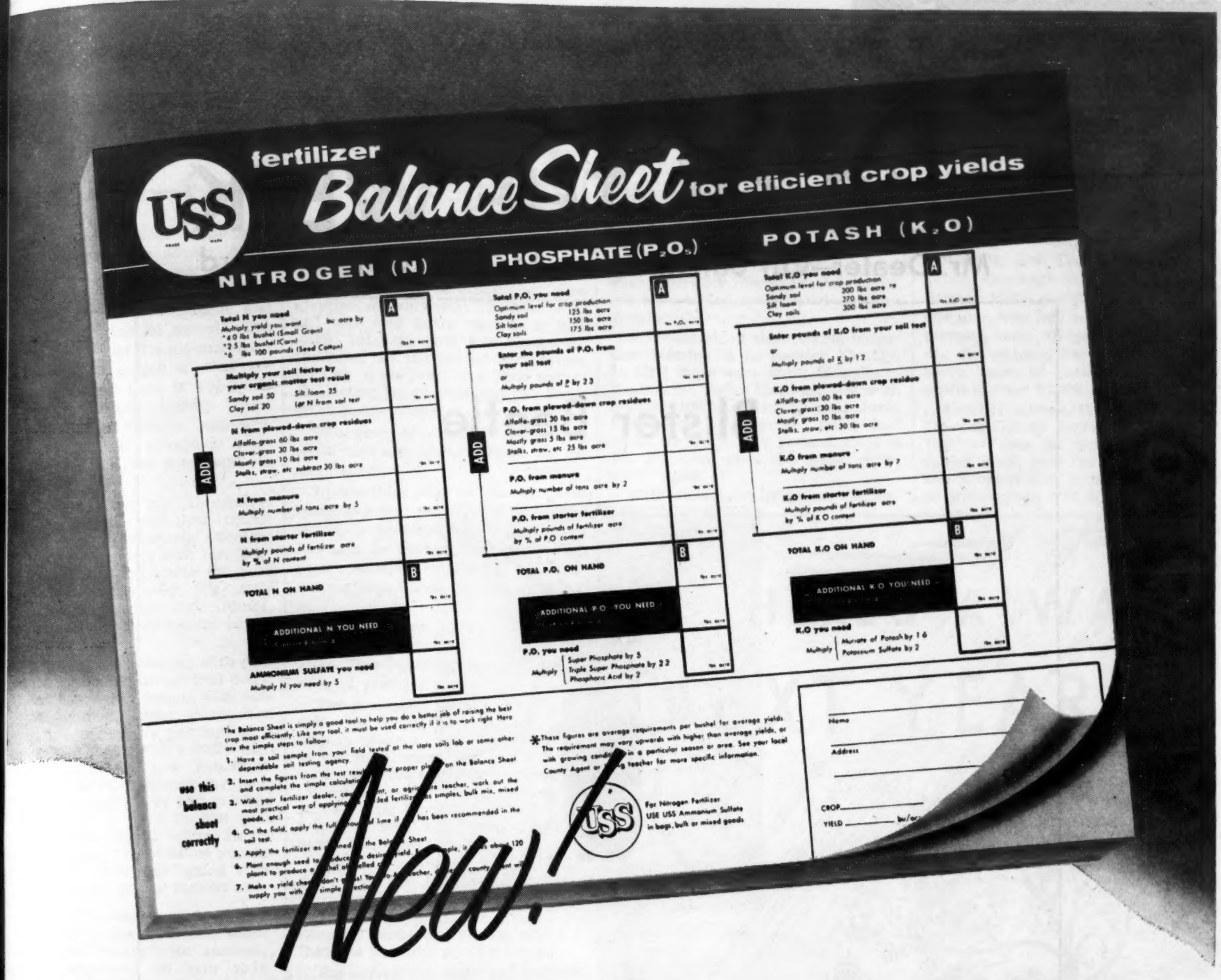
COLLEGE STATION, TEXAS — Grape vines planted 8 feet apart in rows of 12 feet apart and the use of fertilizer mixtures containing phosphorus have proved profitable in grape production, reports U. A. Randolph, in charge of the Texas A&M Fruit Investigations Laboratory near Montague, Texas.

The 8x12-foot spacing, with 454 vines per acre, produced an average of 4,715 lb. of grapes per acre in an 11-year period, or 811 lb. more grapes per acre than the 10 by 10-foot spacing and 1,123 lb. more than 12x12-foot spacing.

Increases of about 1,000 lb. of grapes per acre were made through the use of a 1-2-1 fertilizer ratio and other mixtures containing phosphorus.

STATE PROGRAM

CLEMSON, S.C.—Wise use of fertilizer and lime and effective control of plant pests and diseases are included in a 10-point South Carolina agricultural program, announced recently by the South Carolina State Agricultural Committee and the Clemson College Extension Service.



Now!

"USS FERTILIZER BALANCE SHEET"

. . . and it's free for the asking!

U. S. Steel agronomists have just completed a brand new fertilizer balance sheet. It's designed to help any farmer make a good estimate of the amount of additional fertilizer his soil needs for profitable crop yields.

The fertilization balance sheet is supplied in tablet form with 50 sheets and carbons so that dealers and county agents can have a permanent file copy of a farmer's fertilization needs.

We believe that you'll find this new balance sheet the handiest and most complete ever offered. It's based on a simplified method of evaluating the benefits of manure, crop residue, plow downs and nutrients already in the soil, as against the amount of nitrogen, phosphate, and potash needed for most profitable crop yields.

Use of this balance sheet is the first step toward increased yields. The second step is application of USS Ammonium Sulfate to supply the nitrogen needs indicated by the balance sheet. Because USS Ammonium Sulfate is a dry, free-flowing nitrogen source, it can be applied with ANY type of fertilizing equipment, straight or in mixes, and it's ready to go to work when the crops need it.

Beginning next month, the "USS Fertilizer Balance Sheet" will be promoted to several million farms through ads in national and state farm magazines. Farmers will want to make use of this balance sheet when they plan next year's crops. A supply of balance sheets is available to fertilizer dealers, county agents, vo-ag teachers and farm groups. Simply mail the attached coupon. There's no obligation. Send for your supply . . . today.

USS Ammonium Sulfate

CLIP and MAIL

Room 5153 Agricultural Extension
United States Steel Corporation
525 William Penn Place, Pittsburgh 30, Pa.

Please send me _____ tablets of the new "USS Fertilizer Balance Sheet." (Each tablet has enough sheets for 25 farmers.)

NAME .....

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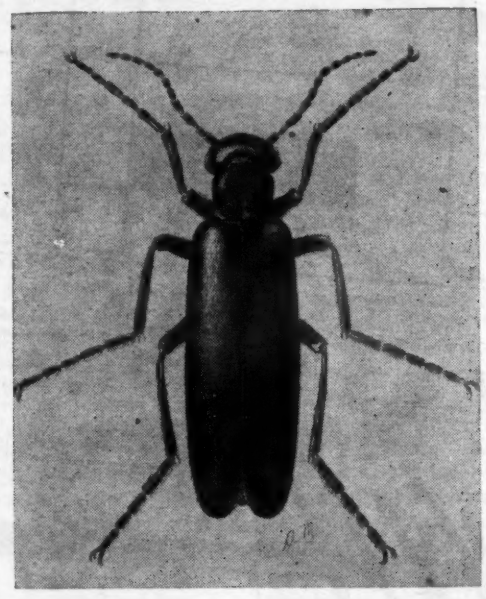
UNITED STATES STEEL

BUG OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

Blister Beetle



How to Identify

Blister beetles are relatively large, measuring up to a full inch in length. Depending upon the species (of which there are several), the insect may be black with narrow light-colored stripes on or at the edge of the wings. Others may be grayish colored, spotted or striped.

Habits of Blister Beetle

The life histories of all species of blister beetle are not known, but those about which information is available, spend the winter months in the larval stage. While in the larval stage, some species actually serve mankind as destroyers of grasshopper eggs. In a given year, some species of blister beetles have two generations, others only one. Females lay their eggs in the soil in groups up to 100. In ten days to three weeks, the eggs hatch into larvae which dig through the soil looking for grasshopper eggs which they eat. The development of the insect from this stage is complicated. It molts four times, undergoing entirely different changes, emerging at last as an adult which attacks many varieties of plants.

Damage Done by Blister Beetles

Being widely distributed throughout the U.S., the blister beetle feeds on a number of crops including both field and garden areas. Alfalfa, clover, soybeans, and garden plants are all on the list for damage by this pest. Plant growth is stunted in many cases, and yields reduced. On the human side, the beetle, if crushed on the skin, will cause blisters to arise on the spot, hence its name.

Control of Insect

When crops of considerable value are infested with blister beetle, various controls recommended include chlordane, 5% dust or 1 lb. actual per 100 gal. water as a spray; mixtures of 25% cryolite and 3-5% DDT are also effective for control. The DDT may be substituted by 75% dusting gypsum, with good results. These insects are not easy to control with arsenicals, since they appear to be resistant to these insecticides. The beetles are also repelled by the presence of bordeaux mixture on plants. In small gardens, it is possible to knock off the beetles by hand into kerosene, which kills them.

Illustration of blister beetle furnished Croplife through courtesy of U.S. Department of Agriculture.

Previous "Bug of the Week" features have been reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.

Little Things in Merchandising Add Up—On the Cash Register

Display is a problem which confronts every retailer almost daily. There are shelves, counters and fixtures to decide upon. Open displays or cases? Should incandescent and fluorescent lighting be mixed? The retailer knows that if some merchandise could be arranged so that the customer will see them it will mean sure sales. Impulse buying. Good lights and good displays help sell. Good display costs money. It's expensive; but it's too important to neglect.

Merchants often kid themselves that poor display and poor housekeeping aren't particularly affecting their sales. Merchants look for "big" things that they can blame for poor business when actually it's little things that are hurting their volume. The good retailer should know better than this.

Whenever we are dealing with people, it's not the big things that count so much anyway. In dealing with people, little things count more. You know how much more pleasant it is to deal with a man with a smile than with a man without one. You know how much more confidence we have in a man dressed neatly and in clean clothes than we have in one with dirty spots and shabby attire. In the same way, many more of us are attracted to a clean well-lighted store than to a dingy, poorly lighted one.

Whenever a study is made of why folks quit trading with one store and started trading with another, we are impressed all over that folks change stores on account of little things. We alienate trade by little things. It's hard for us to realize how much our little faults mean and how much damage to business that they do. It's just human nature to minimize the amount of damage that we, ourselves, actually do.

If a display is not kept clean, orderly and up to the minute, don't kid yourself. Don't minimize the damage you are doing yourself with poor housekeeping and poor display. Things that seem "little" to you are adding up to big numbers in lost sales when these "little" things keep the powerful forces of impulse buying from operating for you.

"How little can a thing be and still make a difference?"

There was a survey made in New York. It was one of Donald Laird's studies and it showed how easily a small thing can be mistaken for a big thing. The basis for this study was four pairs of nylon hose which were identical in every way. They came from the same batch of nylon; came from the same dye lot, and were run off of the same machine by the same operator.

They were, naturally, inspected and reinspected to be sure that they were identical in every way. The hose were put into four boxes that were just alike. Into the first box went only the hose. In the second box, before putting in the hose, on a little square of blotting paper, were put two drops of sachet perfume.

The hose and the blotting paper were not saturated, it must be remembered.

In the third box, on the square of blotting paper, were placed two drops of fruity perfume before putting in the hose. In the last box, the blotting paper received two drops of narcissus perfume before the hose were put in.

The result was four pairs of nylon hose in four boxes that looked just alike. Three pairs of hose had a faint odor of perfume.

The surveyors were told: "Go out and ring doorbells and ask every woman who's at home to participate in the experiment. Put her at ease, that you aren't selling anything or taking orders. Tell her you want her to help you by examining the four boxes of hose and, from the four, select the highest quality nylon hose."

The surveyors were also told, "Now don't rush her. Let her go back and forth and examine each pair of hose as many times as she wishes, but keep all boxes except one closed so that the perfume won't mix up."

The survey was made and two very interesting results developed. First, less than one woman out of every 200 realized that all of the hose were the same quality. Second, 8% chose as the highest quality, the unperfumed hose, 18% or 18 people out of every 100, selected as the best quality hose, the sachet perfumed pair. The fruity perfumed hose ran about as it would by chance; 24% of the women selected the fruity perfumed box as the highest quality hose. Entirely by chance 25% would have.

Here's how the three add up. Half the ladies—50% of them selected one of those three. That means the other 50%—one woman out of every two—had mistaken the slight odor of narcissus perfume for quality in nylon hose. See how small a thing—just a slight odor—can be mistaken for quality in merchandise?

Suppose that the truck your men use to make deliveries looks worn and dirty. It is certain that people are confusing their reactions to those trucks with their judgment as to the desirability of you and your store. Little things are becoming mighty big, aren't they?

Have you looked at your displays lately? Your customers look at them every day. If they are soiled or need repairs, these things become all mingled in their minds with the way they feel about you, your firm, your merchandise in general.

How does the store look to you? Could anyone confuse its appearance with poor quality in your products? Is your store's appearance the slight trace of perfume that is leading the visitors to judge your company and your goods as the best quality? I can't say which way these things are causing your customers to judge, but I can be sure that they are causing your store guests to judge—one way or the other.

Editor's Note

The accompanying article is the second of three prepared for Croplife by Frank Goodwin, professor of marketing, college of business administration, University of Florida, Gainesville, on various aspects of selling. It deals with displays and emphasizes the point that customers judge a retailer and his methods by the neatness of the store's windows and his housekeeping practices. The first article which appeared in the Feb. 20 issue of Croplife, dealt with buying by the retailer and store layout. The third article will discuss advertising and salesmen. It will appear in Croplife next week.

Use of Irrigation Shows Big Gain on West Texas Plains

STANTON, TEX.—The irrigation boom that started on the West Texas Plains a few years ago has reached new intensity. Well drillers throughout the area say they are swamped with orders for new wells and cannot see a breathing spell ahead for several months.

One example of the growing irrigation farming is in Dawson County. In 1952 there were about 20 wells in the county. Today there are 400, with another 100 expected by next June. Four years ago Martin County had about 75 wells. The present total is 350 and new ones are going down every week.

With increasing irrigation efficiency and the use of fertilizer, farmers have also changed their viewpoint on the size well needed to make a profit. Five years ago a well pumping less than 200 gallons per minute was plugged up because it was too small. Now even the tiniest wells are pumped, and many of them make their owners a big profit.

Recently Bob Thurmon, state irrigation specialist with the Extension Service, told a group of farmers about one man who had a pygmy well that pumped only 26 gallons per minute. He watered five acres and made seven bales of cotton, for a gross profit of over $1,000.

Another farmer, G. W. Murphy of Dawson County, has a 40-gallon well that he uses for cotton and vegetables. Each year for the last five it has brought him in as much money as the original cost of $1,900.

THERE'S ALWAYS NEXT YEAR

All crops need nitrogen. When they do...

SELL HORSE & LION NITROGEN FERTILIZERS

Small consolation when this year's crops bring your customers small revenue. It will surely reflect in their ability to buy fertilizer next year—and affect their choice of dealer. Sell them "Horse & Lion" nitrogens—*proven producers* of greater yield and better quality, and the higher revenue volume and top quality always earn.

5 "Horse & Lion" Nitrogen Fertilizers for various requirements are:

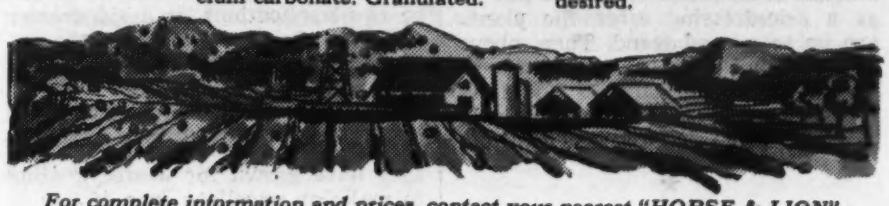
"Horse & Lion" Calcium Nitrate: 15½% pure nitrogen, combined with about 20% available lime. Granulated.

"Horse & Lion" C.A.N. (Ammonium Nitrate Limestone): 20½% pure nitrogen (10¼% nitric and 10¼% ammonic nitrogen) and approximately 32 to 33% calcium carbonate. Granulated.

"Horse & Lion" Ammonium Sulphate Nitrate: 26% pure nitrogen (11% nitric and 15% ammonic nitrogen). Granulated.

"Horse & Lion Urea 44": 44% pure nitrogen. Coated pellets for dry use.

"Horse & Lion Urea 46": 46% pure nitrogen. Pellets without coating for liquid application or dry use where fast dissolving is desired.



For complete information and prices, contact your nearest "HORSE & LION" fertilizer headquarters.

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FARM SERVICE DATA

Extension Station Reports

A fertilizer test conducted during the 1954-55 season in the Lower Rio Grande Valley indicates that nitrogen and phosphorus fertilizers influence the yield and quality of marketable lettuce.

The experiments were under supervision of R. T. Correa, assistant horticulturist at the Weslaco, Texas agricultural experiment station, and by George Otey, manager of the Crop Experiment Station at Edcouch.

When applied at 60 and 120 lb. per acre, nitrogen fertilizers increased the yields of marketable lettuce by 30 to 54%, respectively.

★

Corn is Louisiana's biggest crop in acreage, but it is also one of the most neglected by growers, according to Louisiana State University. The average yield for 1955 was 21 bu. to the acre, an increase of one third over the 1949-53 average.

The increase rate was good, but yields still are too low, says LSU. All the better growers who use adapted hybrid seed and the better production methods recommended by the Louisiana State University Agricultural Experiment Station make 50 bu. to the acre or more. A fourth of them make 100 bu. or more to the acre.

With those facts in mind the LSU Agricultural Extension Service, Louisiana seed dealers and other interested groups are cooperating in a corn yield increase campaign.

★

Spring is an excellent time to top-dress grass pastures, says J. R. Henderson, agronomist with the Florida Agricultural Extension Service. He points out that applying top-dressing in the early spring means less injury to the plants and causes no damage to the field.

★

Fertilizers applied to field crops bring mighty high returns, but those put on home gardens are frequently even more valuable. Telling how garden crops that will be planted in Alabama during the next couple of months should be fertilized for best results, John Bagby, Alabama Polytechnic Institute extension horticulturist, explained that these plants ought to get their food in three "helpings."

The first application, made when the seedbed is prepared and the furrows plowed out, calls for three quarts of a complete fertilizer for each 100 feet of row. An equal amount of fertilizer should be put on as a side-dressing after the plants are up to a good stand. Then, about three weeks later, the garden ought to get its third serving—a side-dressing of one pint of nitrate of soda per 100 feet of row, Mr. Bagby said.

★

Promoting good plant growth by the use of fertilizer will help get better weed control when using 2,4-D, say weed specialists at Virginia Polytechnic Institute.

Various experiments show that when the carbohydrate content of leaves is high, the plants react quickly to 2,4-D. Plants that are starved or lack sunlight are not very sensitive to 2,4-D. For best results with 2,4-D sprays, apply the material after several days of good growing weather, especially when the temperature is above 60°, and the soil moisture is good.

★

Large tonnages of high quality hay can be produced on the sandy upland soils of East Texas by using proper management practices.

Studies conducted by Texas A&M in 1953-55 with Coastal Bermudagrass show an average hay yield of over 13 tons per acre per year with a protein content of about 14%.

These results required the application of 150 to 200 lb. of nitrogen per acre after each harvest and 1 to 2 inches of water a week from rainfall or irrigation. Large initial applications of phosphorus, potassium and lime also were required.

★

When soil tests show insufficient phosphorus and potassium, fruit men at the University of Kentucky advise application of 600 to 1,000 lb. of 0-20-20 fertilizer or its equivalent an acre for strawberries. The material should be broadcast over the rows in February or March. Brushing off the fertilizer from the foilage is advisable.

★

Corn in farm storage is too valuable a feed crop and costs too much to produce to feed to rats, according to W. R. Thompson, Mississippi extension agronomist. Rats can be controlled. Warfarin and pival will give control when used according to the recommendations of extension entomologists, A. G. Bennett and David Young, Mr. Thompson stated.

Rats cost the farmer $10 each a year. Twenty-five rats killed on a farm in a year will save enough money to pay for a television set. In one year's time, one rat will eat 40 lb. of feed and contaminate another 80 lb. Also, one rat will destroy $1 worth of property in a

★

Watermelon growers in South Carolina should make every effort to produce high quality melons in 1956, Hugh A. Bowers, Clemson extension truck crops specialist, advises.

"Plans should be made for using about 800 lb. of a 5-10-10, 3-12-12, or 4-12-12 fertilizer per acre," Mr. Bowers states. "One of the two latter is preferable because plenty of potash helps to give good cutting quality to melons. Half of the fertilizer should be thoroughly mixed with the soil before ridging or bedding, and the remainder should be applied in one or two applications as a sidedresser on both sides of beds. Make the application farther from the plants each time."

★

Louisiana farmers can use the oats they have grown for winter grazing to make an excellent crop of hay or silage later this spring, says R. A. Wasson, agronomist with the Louisiana State University Agricultural Extension Service. The cattle that have grazed the oats for 100 days or more during the winter will have just about cleaned out the available nitrogen, Mr. Wasson says. As soon as the cattle are taken off, the oats should be top-dressed with 30 to 45 lb. of nitrogen to the acre.

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Current capacity for production of anhydrous ammonia was estimated at 4,072,000 tons NH_3 by the U.S. Department of Commerce. The department also said that more than 450 million pounds of toxic materials (not including formulations) were produced in 1955 . . . Swift & Co. announced that it would construct a new plant food factory in Pompano Beach, Fla.

The importance of good management in glassland farming was stressed at the annual meeting of the Association of Southern Agricultural Workers.

Chipman Chemical Co. announced plans to build a 2,4-D plant in Portland, Ore. . . . Fertilizer dealers at Wisconisn Farm and Home Week were told that today's high production costs make it necessary for farmers to get every crop acre to produce to the limit of its capacity.

Stauffer Chemical Co. and Wilson & Geo. Meyer & Co. signed a long-term exclusive sales agreement whereby the Meyer firm will broaden its distribution in the West and Midwest to handle the increased production of new pelletized agricultural phosphates made by Stauffer.

Grace Chemical Co. said it would authorize $100 million in capital expenditures in 1956, with some 40% of this total going into chemical expansion. . . . The USDA recommended an 8% cut in total acreages devoted to summer and late potatoes; and rice growers of the U.S. approved marketing quotas for the 1956 rice crop. The referendum was held Jan. 27.

Dr. Malcolm McVickar, for many years associated with the National Fertilizer Assn. and later with the National Plant Food Institute, was appointed chief agronomist for the California Spray-Chemical Corp. The appointment was to become effective April 1, 1956.

Merger of the Wilson Chemical Sales Co., Portland, Ore. with Great Western Chemical Co., was announced. Richard H. Wilson is general manager of the new operation. . . . Dallas Cantwell, formerly agronomist with Spencer Chemical Co. joined Southern Nitrogen Co. at Savannah, Ga.

Diamond Alkali Co. announced appointments of L. J. Polite, Jr. and John W. Kennady to new positions. Mr. Polite is now product sales manager for a group of organic chemicals and Mr. Kennady is sales manager of agricultural chemicals for the company.

Two new sales representatives were appointed by Grand River Chemical Division, John Deere & Co. They were Bruce Campbell and Norman Messick. Mr. Campbell operates in Nebraska and Kansas; Mr. Messick in New Mexico, Western Texas and Eastern Arizona.

New facilities for the manufacture of granular high-analysis fertilizers were completed at Perry, Iowa, by Davison Chemical Co., Division of W. R. Grace & Co. . . . Corn borers were found infesting the stalks of cotton plants in Missouri and Tennessee. It was the first such incident to be reported.

W. F. Libby, commissioner of the U.S. Atomic Energy Commission, stated that the use of atomic energy in agriculture can save farmers as much as $210 million a year.

Agricultural groups meeting in Portland, Ore. Jan. 15-18, heard talks on systemic pesticides, insect resistance, and new methods of control. The Pacific Northwest Agricultural Chemical Industry groups in joint sessions included the Northwest Vegetable Insect Control Conference, and the Western Cooperative Spray Project.

Dr. W. B. Albert, South Carolina Agricultural Experiment Station, Clemson, S.C., was elected president of the Southern Weed Conference at the group's meeting in New Orleans, Jan. 18. He succeeded Dr. C. G. Klingman, North Carolina State College, Raleigh.

That the capacity for nitrogen production in the U.S. was greater on Jan. 1, 1956 than the goal previously set by the Office of Defense Mobilization for Jan. 1, 1957, was announced in a report by the U.S. Department of Commerce. The total capacity of 3,618,000 tons existing at the first of this year is 118,000 tons greater than the goal of 3,500,000 tons ODM had hoped for a year later.

Stauffer Chemical Co. announced having located large minable deposits of high grade phosphate rock on its patents near Bear Lake, Idaho. Reserves in the deposits were estimated at over 5,000,000 tons of commercial grade rock . . . Phillips Pacific Chemical Co. announced that it would soon begin construction on a 200-tons-a-day anhydrous ammonia plant on its recently acquired site on the Columbia River near Kennewick, Wash.

Nearly 200 persons attending the 10th annual Wisconsin Insect Control Conference at Madison were urged to "follow the labels and don't take chances on residues" when using pesticides. Speakers included prominent figures in the industry, colleges, state and federal groups. . . . Dr. E. W. Stafford, Mississippi State College entomologist, was presented with a distinguished award for 39 years of service during the second annual Mississippi Insect Control Conference at Mississippi State College. More than 250 were in attendance.

California Spray-Chemical Corp. began operations at its new liquid fertilizer plant near Modesto, Cal. Capacity of the plant is 400 tons a day of aqua ammonia and 100 tons of neutral mix fertilizers. The plant was reported to be the forerunner of a $16,000,000 expansion program on the part of Standard Oil Co. of California, of which Calspray is a subsidiary.

Both production and consumption of nitrogen on a world scale are continuing to maintain an upward trend. During 1954-55, production increased by 14% compared with the previous fiscal year, and consumption went up 13%. World inventories of the material were reported to have increased over those of last year.

ominco to Build ew Storage Plant

POKANE, WASH.—R. Hendricks, sident of Cominco Products, Inc., announced that his company will nd about $1 million to build solid d liquid fertilizer storage facilities Trentwood, about nine miles east Spokane.

Cominco Products, Inc., a new mpany with its head office in Spone, has been formed primarily to ovide service facilities that will edite delivery of fertilizers proced by the Consolidated Mining & melting Co. of Canada, Ltd., for le in the western and midwestern S.

Balfour, Guthrie & Co., Ltd., San rancisco, will continue to handle ll U.S. sales of fertilizers produced y the Consolidated Mining & melting Co.

The Trentwood project will involve e construction of a 1,000 ft. by 240 warehouse building capable of lding 50,000 tons of bagged ferlizer, the provision of 4,000 feet of ackage to service the building and e purchase of sufficient land to rmit construction of two more 50,-0 ton storage units plus an enrged tank farm for liquid fertilizer orage.

The building will be located on the okane International Railroad. It ll be of steel frame construction, vered with galvanized steel sheetg and equipped throughout with a rinkler fire protection system. quipment for handling truck shipents will be provided. Feature of e project is the provision of facilies for the storage of liquid fertizers and equipment for the conver-on of anhydrous ammonia to aqua mmonia.

rogram Announced or Clemson Pesticide hemicals School

CLEMSON, S.C.—The program for e fifth annual Pesticide Chemicals hool scheduled for Clemson College eb. 28-29, has been announced.

According to Dr. J. H. Cochran, ead, Clemson Entomology Departent, the opening session will get nderway at 9:30 a.m. Feb. 28, at the lemson House Hotel. Dr. M. D. arrar, dean, School of Agriculture, ill make the welcome address. He ill be followed by a panel discussion the aerial application of pesticides. r. Cochran will discuss what the iller Bill will mean to the pesticide dustry; Geo. B. Nutt, director, lemson Extension Service, will talk the role of extension in pest conol, and Dr. W. B. Albert of the otany Department will complete the orning session with a discussion of erbicides.

Topics to be discussed Feb. 28 will clude the control of insects, weeds, nd diseases which attack foliage and uit of major economic crops, control soil pests and seed treatments. The ession will be completed with a tour the new Clemson Agricultural enter.

A highlight of the meeting will be banquet Feb. 28 at the Clemson ouse Hotel. Dr. James M. Grayson, ead, Division of Entomology, Virnia Agricultural Experiment Staon, will be the featured speaker. is topic will be "Insect Resistance."

The Feb. 28 morning program will clude discussions on household and rage pests, insects affecting man d animals, systemic insecticides, rmite survey in South Carolina, rmite and wood decay and rat conl. Discussions during the meeting ll be by members of the Clemson e, representatives of the State ard of Health, U.S. Fish and Wild-e Service, aerial applicators, S.C. ronautics Commission, and the U.S. partment of Agriculture. The meetg will adjourn at noon Feb. 29.

Continued Rains Bring Problems to Mid-South Farmers

MEMPHIS — Rains continued to keep Mid-South farmers busy with paper work, delaying further preparation of land for spring planting.

Extension officials in Arkansas, Mississippi, Missouri and Tennessee reported in their weekly crop surveys that continued rains pose some threats to the farmers.

They pointed out that in many areas where the land is not properly drained farmers will be late getting into the fields because the land is saturated. Also there is the threat that warmer weather and rains might make fruit trees bud prematurely, placing them in danger of being killed by a late freeze, such as occurred last year.

The heavy rains in West Tennessee, Eastern Arkansas and Southeast Missouri were causing some worry and extra work, because rising streams are forcing farmers to move their cattle from the lowlands and evacuate their farms.

Mississippi farmers, unable to do outside field work because of continued rains and wet land, are concentrating on planning the year's crop program, the Mississippi Agricultural Extension Service said.

Small grains and winter grazing crops continued to make good growth, but fields were too wet to graze. Stock ponds now are mostly well filled, and streams are overflowing into some areas. Home gardening as well as regular crop work is at a standstill.

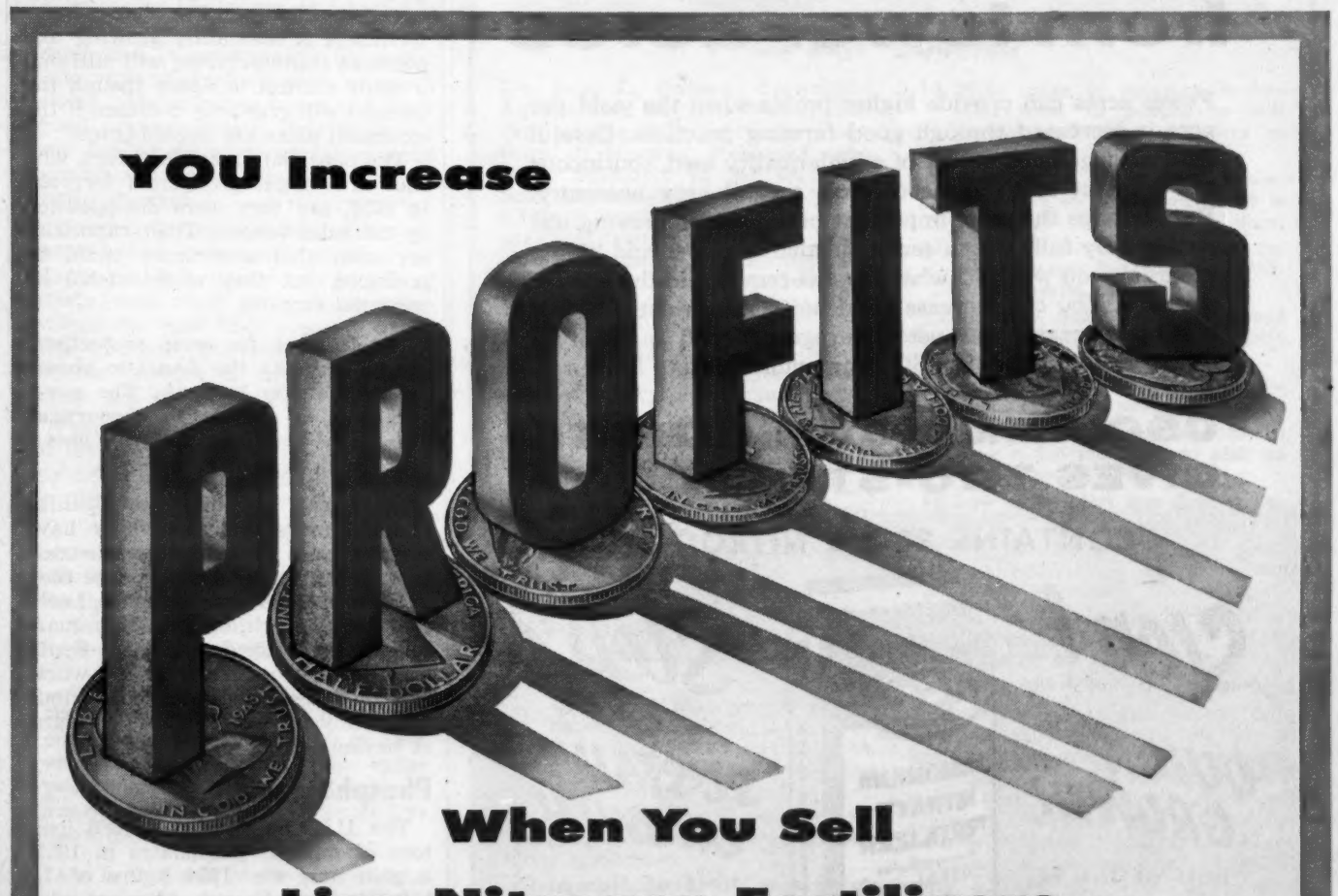
Arkansas farmers took advantage of continued wet and cold weather to catch up on farm chores, "book work" and planning for their 1956 plantings. But it still was too wet for them to get into their fields on any big scale.

The Arkansas Agricultural Extension Service said the recent heavy rains pose a danger to orchards, since if prematurely warm weather hits soon, many fruit trees may start budding. Killing frosts then might take the heavy toll of Arkansas fruit production that they did last year.

Aside from on-the-farm activities, the Federal Crop Reporting Service in Little Rock released a report showing that Arkansas continues to make big gains in becoming a livestock producing center. The service said that as of Jan. 1, total value of livestock on Arkansas farms was $117,900,000, a 20% increase in the valuation of a year earlier.

Clear skies for the first time this month will afford West Tennessee farmers a chance to catch up on maintenance of building and machinery, although fields remain too wet for work, Judd Brooks, district farm agent at Jackson, said.

"We definitely have had enough rain for a while and if the weather stays dry, land preparation can start in a week," he said. "Lake County farmers will probably get a jump on the rest of the area with preparation for this year's cotton crop."



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Lion Nitrogen Fertilizer Solutions—Various types to suit your particular manufacturing needs.

Lion Sulphate of Ammonia—White, uniform, free flowing crystals. Guaranteed 21% nitrogen.

Retailers who market Lion nitrogen fertilizers are enjoying sales increases and expanding profits, because the Lion brand is being continuously *pre-sold* to farmers—and retailers reap the benefits.

Throughout the year, Lion advertising appears in leading state farm publications, and in Farm & Ranch-Southern Agriculturist, Prairie Farmer, Progressive Farmer, and Wallaces' Farmer & Iowa Homestead. These advertisements tell farmers—again and again—the *facts* about plant foods: that the farmer who uses the proper kinds and amounts of commercial fertilizers will increase his yields and his profits. This advertising sells fertilizers, for Lion and for *you!*

Lion's two giant chemical plants have the capacity to assure you a steady supply of the most popular and economical types of nitrogen fertilizers. In fact, Lion is the world's largest manufacturer of prilled ammonium nitrate, and one of the industry's leaders in producing other nitrogen fertilizer materials.

It's easy to sell nitrogen fertilizers with the Lion emblem on the bag, or Lion's anhydrous ammonia. And easier selling adds up to *more profits for you.*

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Fewer acres can provide higher profits when the yield per acre is increased through good farming practices. Careful land management, choice of a high-quality seed, continuous weed, insect and disease controls are all very necessary. But, perhaps the most important practice is improving soil fertility. By following a recommended fertilizer and liming program, you will add what the soil requires in the correct amounts. You can increase yield per acre at relatively low cost by increasing your use of nitrogen. A good source of nitrogen in solid form is CSC Ammonium Nitrate Fertilizer.

CSC AMMONIUM NITRATE GIVES TWO-STEP ACTION

CONTAINS 33.5% NITROGEN

Step 1

QUICK-GROWTH

half of the nitrogen immediately available for rapid early growth

Step 2

SUSTAINED GROWTH

half of the nitrogen available more slowly for continued growth

CSC Ammonium Nitrate Fertilizer is guaranteed to contain a minimum of 33.5% Nitrogen. Two-step action is possible because this 33.5% Nitrogen consists of equal quantities of quick-growth nitrate nitrogen and sustained growth ammonia nitrogen. The illustration shows the exclusive actual size of CSC Ammonium Nitrate Fertilizer. It flows freely, spreads evenly, never clogs or sticks in the spreader. Low-moisture CSC Ammonium Nitrate is specially coated and packed in sturdy bags to prevent caking or lumping during storage. Spend your fertilizer dollar wisely — look for CSC's green and white bag the next time you buy fertilizer.

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NITROGEN THE HEART OF THE HARVEST

WORLD REPORT

By GEORGE E. SWARBRECK
Croplife Canadian and Overseas Editor

Fertilizer firms in Spain are making a big drive to increa production. Backing them is the government for the more that ca be produced at home, the less is needed from overseas supplier And that mans a saving in the expenditure of scarce foreign currenc particularly dollars.

Plans are being made for the erection of new nitrogenou fertilizer plants while others will be enlarged. Between 1941 and 195 the average annual production was 17,000 tons; in 1955 the industr produced 220,000 tons. With the increases now planned the Spaniards expect to save $10 million.

Imports of fertilizers have grown in recent years and in 1954 the total was 460,000 tons. Sulfate of ammonia made up 250,000 tons; nitrate of soda 140,000 tons, plus 48,000 tons in other nitrates. The demand for fertilizers is constantly growing and overseas manufacturers will still find a ready market in Spain though the demand will gradually decrease if the extension plans are implemented.

The phosphate manufacturers, who showed a slight production increase in 1955, say they were disappointed by the sales volume. Their capacities are such that even more could be produced, but they were outsold by imported supplies.

Look, then, for some protection to be given to the domestic phosphate industry in Spain. The government is anxious to encourage the home producer and the pressure is on to cutback imports.

On top of all this, the Spanish manufacturers feel that they have every chance of competing successfully in the export markets once they get into a position of surplus. Look, too, for competition from this quarter in established markets. Spain needs foreign currency in the worst way, and the government is anxious to aid any industry that shows signs of paying off.

Phosphate Imports

The U.K. imported 1,132,686 long tons of mineral phosphates in 1955, a gain over the 1954 figure of 1,110,294 tons. French Morocco was the biggest supplier with a total of 682,245 tons, 60,000 tons more than the offtake by the British from this source in 1954. More business was registered, too, by U.S. suppliers who exported 143,057 tons against 1954's 128,151 tons. Algeria sent slightly more, but Tunisia showed a slight reduction, as did other Commonwealth countries and the Republic of Ireland.

German Nitrate

More gains were registered by German manufacturers of nitrate fertilizers in 1955. Production increased. So did export business.

The industry in Western Germany produces 10% of the world's production, roughly 790,000 tons coming out of the plants. This figure represents an increase of more than 13% over 1954.

Spray Project

The annual airborne attack on budworm in the spruce forests of New Brunswick and the Gaspe in Canada is being readied.

A 90-plane fleet, an all-time high, is being used to check infestation. Robert Rychlicki, general manager of Wheeler Airlines, St. Jovite, is busy signing up aircraft for the job. The season will open in May. Canada will provide 22 aircraft, the balance coming from the U.S.

This year's spraying operations are being undertaken by Forest Protection, Ltd., in New Brunswick, and by the Quebec Forest Industry Assn. in the Gaspe. About 1.2 million acres will be sprayed at a cost of around $1 an acre.

Surveys indicate that the budworm plague has been moving steadily eastward and it is expected that it will move out to sea within a few years. Meanwhile, it means big business for the spray operators.

Indian Success

India's fertilizer factory at Sindri topped its 1954 production figure of 275,529 tons of ammonium sulfate by more than 50,000 tons. The daily output in November, 1955, was above 1,000 tons.

Since going into production in 1952 Sindri has produced more than a million tons of fertilizer and this supply has saved the Indian government large amounts of foreign exchange. As production increased, the selling price to the farmer has been reduced, thus insuring greater acceptability among users.

The plan to expand Sindri's production by 60% using coke-oven gas from the coke-oven plant of the factory is now under way and work on the foundation of the new plant has begun.

Nitrogen-Fixation

The Ministry of Commerce and Industry in the Federation of Rhodesia and Nyasaland has engaged a group of British experts to examine the possibilities of manufacturing synthetic nitrogenous fertilizers and nitrogen compounds within their territory.

Spencer Purchases Parker-Browne Co.

KANSAS CITY—The assets of the Parker-Browne Co. of Fort Worth, Texas, since 1906 producers of liquid carbon dioxide and dry ice, have been purchased from the Morris Greenspun family by Spencer Chemical Co. of Kansas City, Mo., for an undisclosed sum, according to an announcement by Kenneth A. Spencer, president of the Kansas City firm.

Spencer Chemical Co. has been active in carbon dioxide production since 1948, and the assets of Parker-Browne will be integrated with this phase of Spencer's business. Spencer presently produces carbon dioxide at its Jayhawk Works near Pittsburg, Kansas.

Carolinas-Virginia Formulators to Meet

RALEIGH, N.C.—The spring meeting of the Carolinas-Virginia Pesticide Formulators Assn., Inc., will be held at Ocean Forest Hotel in Myrtle Beach, S.C., May 7-9.

Reservations may be made directly with the hotel or through the secretary-treasurer, W. R. Peele, 516 S. Salisbury St., Raleigh. Mr. Peele has asked those making direct reservations to send him a copy for use in making up an advance registration list.

MIDWEST AGRONOMISTS

(Continued from page 1)

search "know-how" must be sold to farmers on the basis of dollar returns.

Recent Ohio research, he said, indicates that corn produced without fertilizer and sold at $1.50 bu., could yield $19.50 profit; but the same corn sold at $1 would yield no profit.

Corn with adequate fertilizer could yield $52.60 profit, if sold at $1.50 bu.; corn at $1 bu. would yield $15.10 profit.

"This emphasizes the important place proper fertilization plays in producing net profit," Dr. Coleman pointed out. "And it particularly emphasizes the need for farmers to use fertilizer when corn prices are relatively low."

Other Ohio State University research data indicated that without fertilizer, corn producing 39 bu. per acre cost $1 bu. to produce, whereas with adequate fertilizer, a 75-bu. yield would cut the cost of production to 80¢ bu.

Dr. Coleman expressed alarm over the number of comments "from responsible people in government—even in Congress—who state that research is responsible for our present surpluses in agriculture.

"How ridiculous this sounds to those who know that only through the application of research can farmers possibly stay in business," he said. "Yet for the protection of our agricultural research programs, we must convince those who hold the purse strings.

"Admittedly this requires a sales effort on the part of land-grant colleges. In many states you already have the information to do this sale job," he told the research men.

Dr. Coleman cited recently published Missouri data which show that corn profits can be increased from less production on fewer acres.

"In effect, these data show that Missouri farmers by using fertilizers along with other good soil management practices can cut the average cost of producing corn from 84¢ to 58¢ bu., he said.

"If this could be accomplished, Missouri farmers could realize more net income from 120 million bushels of corn produced properly, than they now receive from 140 million bushels."

The use of fertilizer-insecticide mixtures on American farms has more than doubled since 1953, Victor C. Smith, Velsicol Chemical Corp., Chicago, told the group. He said that use of mixtures in 1954-55 fiscal year totaled about 200,000 tons.

He gave the following reasons for the gain in use of mixtures:

"Almost perfect control of soil insects is provided by soil insecticides applied in fertilizer-insecticide mixtures."

"The farmer saves time before planting when every hour is crucial."

"It is estimated that the farmer saves about $1.40 per acre by applying fertilizer and insecticide in one application."

"The one application of fertilizer and insecticide, together, helps certain farmers who wish to take advantage of the winter soil conditioning and do not want to work their soil more than a minimum number of times."

Mr. Smith reported that new methods and improvements have been developed for adding pesticides to fertilizer that makes the process less expensive for plant food manufacturers, easier and quicker to handle and uniform in results.

Midwestern farmers are now using insecticide-fertilizer mixtures on about 1 million acres of corn land to help control rootworms, wireworms and other damaging pests, Dr. J. W. Apple, University of Wisconsin entomologist, reported.

Dr. Apple reported that corn yields were increased as much as 39 bu. per acre and lodging reduced about 90% in some 1955 Wisconsin tests where insecticides were added to starter fertilizers to control rootworm infestations.

Varying amounts of heptachlor, aldrin and chlordane were used in fertilizers such as 5-20-20 and 4-16-16, to provide concentrations of one fourth to one pound per acre in the various tests.

Some earlier tests in Iowa indicated that insecticides in starter fertilizer containing aldrin, chlordane and dieldrin reduced rootworms 87% and increased yields 28%, he said.

Control of wireworm ranks next to rootworm in the use of insecticide fertilizer in the Middle West, Dr. Apple said. Wireworms can damage a wide variety of plants such as small grains, potatoes, lima beans and other small acreage crops. Practically all corn fields have a few wireworms and occasionally heavy infestations cause costly damage.

The use of insecticide-fertilizer on lima beans increased survival of plants by 145% where two pounds of aldrin was used to combat wireworms, he said. Half a pound of aldrin increased survival by 114%. A similar amount of heptachlor gave about the same results.

Potential future use of insecticides in fertilizer, said Dr. Apple, will be governed only by the total sale of all fertilizers.

"Investigators are finding an ever-increasing need for the elimination of soils insects," he said, "and fertilizer, whether spread broadcast or used as a starter, can provide an excellent carrier for insecticides."

An Illinois agronomist reported that heavy fertilization had boosted corn yields 50 bu. per acre in 1955 on some experimental fields cropped continuously to corn for many years at the Morrow Plots at Urbana, Ill.

Dr. L. T. Kurtz of the University of Illinois agronomy department, said that these particular fields had previously been cropped under an extremely poor management system with no return of fertility or crop residues to the soil. A heavy fertilizer treatment was made to a strip across this area last season.

He termed the results "the most spectacular fertilizer response in Illinois research during the year."

"The addition of fertilizer made the yield almost equal to those obtained on the best plots in the Morrow area which have been farmed under good management methods over the years," he said.

The Morrow Plots are the oldest fertility experiment plots in the U.S.

Discussing results of other research by Illinois agronomists, Dr. Kurtz expressed the view that there is little difference in crop results between fall or spring applications of nitrogen fertilizer.

Various forms of nitrogen appear to be about equally effective when applied to wheat, Dr. Kurtz indicated.

He said that a study of the components of organic matter now under way by the University of Illinois agronomy department may offer the promise of improved soil tests for nitrogen.

Studies on analyses of trace elements from a large number of crop samples on corn and soybean plants grown on a wide variety of soils indicate that no shortages of these elements are yet apparent in Illinois, he reported. Soybean plants from a

(Continued on page 20)

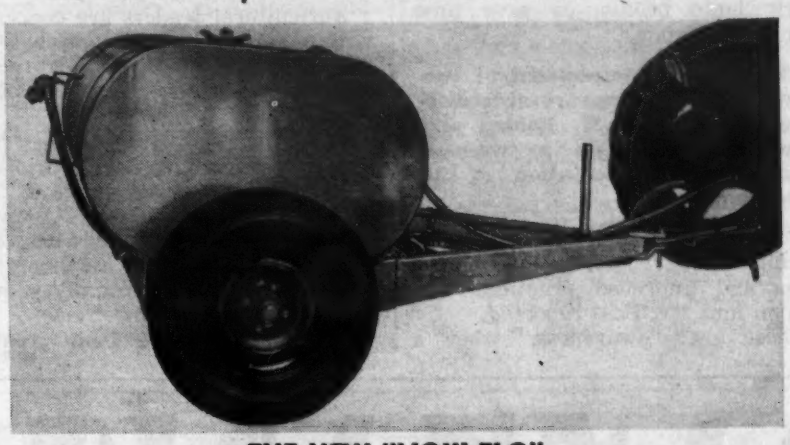
Dr. John L. Strauss

has commissioned

The Kelly Ryan Equipment Co.

of Blair, Nebraska

TO MANUFACTURE and DISTRIBUTE
HIS NEW LIQUID FERTILIZER APPLICATOR



THE NEW "LIQUI-FLO"

Dr. John L. Strauss, Consultant Agronomist, and now Vice President of the T-P Fertilizer Company, of Herman, Nebraska, who is an authority in the fertilizer field, has designed and field-tested a liquid fertilizer applicator more practical than anything now available. He has commissioned the Kelly Ryan Equipment Company to manufacture and distribute this new applicator.

The following is a description of the applicator and reasons for its superiority, by Dr. Strauss.

The "Liqui-Flo" applicator as proposed was designed and based upon the following points:

1. **The design and equipment are the result of four years' experience in manufacturing, handling and applying the liquid fertilizer.**
2. **Low cost.**
3. **Simplicity and convenience.**
4. **Practical workability.**

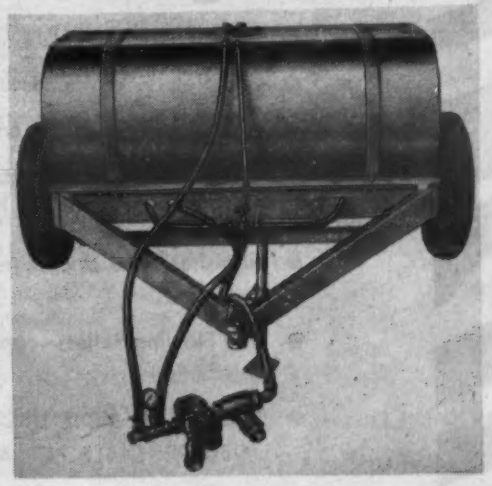
The "Liqui-Flo" applicator can do the following:

1. **Carry over 2500 pounds of fertilizer. (275 gallons.)**
2. **Cover a swath 28 feet in width.**
3. **Apply fertilizer more evenly than dry fertilizer.**

The "Liqui-Flo" applicator has the following advantages over other fertilizer applicators:

1. **Low silhouette. This allows easy loading by gravity from a nurse tank or barrels on a truck. The low center of gravity also allows the equipment to be utilized more safely in hill country.**
2. **Nothing extra to buy or add. The applicator is complete and ready for use. It includes the trailer, wheels and tires, pump strainer, gauge, hoses and applicating nozzle. One has to merely drop in the draw bar pin, attach the power take-off pump and proceed with the task ahead.**
3. **Large applicating nozzle eliminates costly stops associated with small nozzles of weed spray booms.**
4. **No booms. Goes wherever the tractor goes without danger of snagging or breakage. This also reduces the initial cost and the upkeep.**
5. **Compact. Follows tractor closely, easily stored.**
6. **Double outlet to allow even flow even on side-hills.**
7. **All parts accessible for easy cleaning.**
8. **Sturdy construction.**
9. **Field proven by farms and custom applicators.**
10. **Wide range of application. Applies from 75 pounds to 550 pounds of fertilizer per acre at tractor speeds.**
11. **Wide swath of 28 feet. Allows farmer to do in one day what it takes him ordinarily three days.**
12. **Convertible. Can be used for weed sprayer by changing application nozzle only.**
13. **Versatile. Tank can be removed from trailer to make a handy farm trailer.**
14. **Fertilizer applied in large drops thus minimizing any wind effects.**
15. **Telescope stand allows one to park a full load and to pick up with minimum effort.**
16. **Low cost. Costs less than equipment which does less work.**
17. **Can be used to apply 32% nitrogen solutions if washed clean after operations.**
18. **Can lower the cost of a ton of fertilizer on the ground by $4.00 to $6.00 by saving on time and labor and depreciation.**

Due to the rapid and recent development of the liquid fertilizer industry, manufacturers have been at a loss to build a suitable applicator that could be regarded as standard. We feel the Liqui-Flo now fills all the qualifications. We have set a special low price of only $197.00 complete, net cash, F.O.B. factory. This price is possible only because we are selling direct—no sales commissions or jobber mark-ups. Should any of your larger customers care to buy



a Liqui-Flo machine, we suggest a list price of $328.33. We will build only a limited number of machines this coming season. Probably an average dealer should use a minimum of 3 applicators to rent to his customers or for his own direct operations. Order direct from

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BLAIR, NEBRASKA

KELLY RYAN EQUIPMENT CO. BLAIR, NEBRASKA

MIDWEST AGRONOMISTS

(Continued from page 19)

few locations, however, appear to be low in either manganese or boron.

Newspapers, farm magazines, radio, TV and other mass media are major factors in making farm people aware of new ideas and practices that will cut their costs of production, increase crop yields per acre, speed work, build profits, or save time, money and labor.

That was the statement of two Iowa State College rural sociologists — Joseph M. Bohlen and George M. Beal—in a two-man flannel-graph presentation at the meeting.

People go through five stages in learning about and adopting new ideas and improved practices, Mr. Bohlen and Mr. Beal reported.

These are: "awareness," when a farmer learns of the existence of the idea; "interest," when he seeks more information about it; "evaluation," when he weighs its practical value to him; "trial," when he applies the practice on a small scale, and "adoption," when he accepts the idea for continued use.

Agricultural leaders are concerned with narrowing the time gap between early and late adoption of recommended practices, the sociologists pointed out.

"The average time span from awareness to adoption of hybrid seed corn in Iowa was seven years," Mr. Bohlen and Mr. Beal said. "Adoption of most other hybrid seeds has come more rapidly. Changes involving new skills or techniques usually require longer time."

Mass media make their greatest impact in the "awareness" and "interest" stages, according to the Iowa specialists. Neighbors and friends are most important as information sources in the "evaluation" stage. In the "trial" stage agricultural agencies, college extension departments, bulletins, neighbors and friends are important; dealers and salesmen are important, too, in this stage when commercial products are involved.

Mr. Bohlen and Mr. Beal reported also that:

The more education an individual has, the more likely he is to adopt new farming practices. Those with high school training and above, tend to adopt new practices earlier than those with less formal training.

Farmers who have children in 4-H clubs or vocational agriculture courses tend to adopt more improved practices than others. Participation in adult college extension programs is positively related to adoption of new practices.

Young farmers tend to be more favorable toward new practices, but are not always in position to put their ideas into operation.

Farm families which share farm income equitably between father and son, tend to be earlier adopters of new ideas than families in which the father retains control of the farm.

An electronic brain named "Iliac" can help a farmer plan his cropping and livestock operations for the highest possible profit whether prices go up or down, an Illinois farm economist reported.

Earl R. Swanson, University of Illinois, said that it took Iliac just 20 minutes without human intervention to whirl through almost endless combinations of figures and come up with four alternative plans for operating a 320-acre Illinois farm at maximum financial returns, depending on various price levels for corn.

The machine is known as an "electronic digital computer" and is used in a recently developed mathematical technique called linear programming, Mr. Swanson said.

In arriving at its recommendations the electronic brain had to consider factors such as crop rotations, various levels of fertilizer applications, the farmer's starting capital, cropping patterns, limestone, manure and the acreage planted to various crops.

In addition, it had to review detailed data on relationships between crops and livestock, the farm's soil types, avaliable machinery, amount of family help to work the farm, livestock systems, the value of roughage and various market prices for corn, small grains, hogs and cattle.

In another test for a 200-acre farm, Iliac recommended six alternative high-profit cropping systems for a 10-year phosphate fertility build-up program, where various amounts of cash would be available in the first year.

Besides helping solve various agricultural problems, the electronic brain has a wide variety of applications, ranging from military logistics to finding the shortest route for traveling salesmen, Mr. Swanson said.

"The chief limitation of the technique of linear programming is not the technique itself, but the fact that large amounts of information are needed before a problem can be set up for solving," he said. "Most farmers do not have the detailed information for a thorough job of programming.

"We do not hope by these methods to work out a 'recipe' for large numbers of farms. But we do hope, however, to get a more realistic conception of fitting the individual enterprises and practices into the total farm business."

Burley tobacco yields were boosted by 760 lb. per acre and the crop value increased by $410 per acre in Kentucky tests when nitrogen was added to a basic potash application and barley and vetch were grown as a winter cover crop on soil high in phosphate.

That was the statement of Dr. William A. Seay, University of Kentucky agronomist in a report to the meeting.

In these tests at Lexington, Ky., some tobacco plots had barley alone as a winter cover crop; others had barley and nitrogen-fixing vetch. All fields had a 200-lb. per acre potash application. Nitrogen was added to some fields at the rate of 50 lb. per acre, and on others at a 100-lb. rate.

Yields averaged 1,880 lbs. per acre with a $960 value where 100 lb. of nitrogen was added to the potash application on tobacco fields with barley and vetch cover crop, Dr. Seay reported. This compared with 1,120 lb. worth $550, where potash alone was added and barley was the cover crop.

At a 50-lb. nitrogen rate, yields were 1,750 lb. with a value of $915 per acre where barley and vetch were the cover crop, compared with 1,490 lb. worth $760 where barley alone was the cover crop.

In other tests where a tobacco, corn, wheat and hay rotation was used, the addition of 200 lb. per acre of nitrogen to 100 lb. of potash, increased tobacco yields by 720 lb. per acre and the crop value by $326. Fields that had no nitrogen yielded 1,340 lb. of burley, valued at $624 per acre.

On soils low in phosphate, the addition of 200 lb. of phosphate per acre to 80 lb. of nitrogen and 200 lb. of potash, increased tobacco yields by 600 lb. per acre and the crop value by $393.

Tobacco yields and quality showed a marked upturn on potash-deficient soil when this nutrient was added in a fertility-exhausting rotation of tobacco, corn, wheat and hay, according to Dr. Seay.

In other tests, where the rotation was burley tobacco one year and grass and legumes two years, tobacco yields were increased 320 lb. per acre, the value boosted $355 and the value per pound increased 14½¢, when 240 lb. of potash was added along with 80 lb. of nitrogen and 180 lb. of phosphate.

Dr. Seay pointed out that for high yields and high quality burley tobacco needs a much larger supply of nutrients from the soil than does corn. And since the tobacco is sold by grade, considerable attention must be given to fertilizing for a quality product. In tests where adequate amounts of balanced nutrients were added, the value per hundred weight increased all the way from $1.50 to $14.50, he said.

Radioactive phosphorus—a development of the atomic age—is giving research specialists new information about how much of the nutrients in a plant come from fertilizer and how much is supplied by the soil, Dr. A. C. Caldwell, University of Minnesota soils specialist, told the group.

By "tagging" some of the phosphorus in fertilizer to make it radioactive, said Dr. Caldwell, it is possible to trace the fertilizer from the soil to the plant, and find out how much of the plant phosphorus came from the fertilizer.

Dr. Caldwell reported that 35% of the phosphorus in alfalfa plants came from fertilizer in Minnesota tests when established meadows were top-dressed with the equivalent of 266 lb. of concentrated superphosphate per acre. This application boosted yields by 39%.

When the equivalent of 90 lb. of concentrated superphosphate per acre were added, about 19% of the alfalfa plants' phosphorus content was traceable to the fertilizer. Yields increased about 45% compared to unfertilized plots.

Adding nitrogen helped increase the uptake of phosphorus in most

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ps studied, according to Dr. Caldll. This was particularly true of rn, he said.

Early maturing inbred lines of hyd corn used larger amounts of fer- izer phosphorus than did most of e medium or late maturing lines, said.

Dr. Caldwell reported that other sts have measured the residual or arryover" amount of phosphorus at remains in the soil for plant use ter crops have been harvested.

In one series of tests in Southern innesota, five different forms of hosphorus were added to various ots at the rate of 40 lb. of P_2O_5 r acre per year for six years. These cluded ordinary superphosphates, lcium metaphosphate, phosphoric id, fused tricalcium phosphate and ck phosphate. On some plots, rock hosphate was also added to the te of 100 lb. of P_2O_5 per acre per ear.

The results showed increased yields first-cut legume hay over the enre six years from the phosphorus dded in the various fertilizers, with e exception of rock phosphate addd at the smaller rate. Superphosate boosted hay yields three fourths a ton per acre. The other phosorus forms gave smaller increases. ock phosphate applications at a 40- P_2O_5 rate resulted in a slight deease in hay yields. When this apication was increased to 100 lb., hay ields went up about one fifth of ton.

Available phosphorus in the soil as as much as 100% greater in plots eceiving superphosphate, calcium etaphosphate, phosphoric acid, and used tricalcium phosphate than in hose receiving rock phosphate, or no ertilizer at all, Dr. Caldwell said.

In other tests, the long continued se of superphosphate and manure ad doubled or trebled the available hosphorus in the soil, he reported. n some of the plots, superphosphate, ock phosphate and manure had been pplied for more than 40 years and n others these applications had been ade for 20 years and then discon- inued.

The residual or "carryover" benefit as highest on plots receiving superhosphate, next highest from superhosphate and manure and third ighest from manure. Little residual ffect was recorded from rock phosphate or a combination of rock phosphate and manure, Dr. Caldwell said.

Irrigation as a drouth-proofing measure gave 60 bu. per acre corn yields in Nebraska's damaging 1955 dry season, while corn in non-irrigated areas averaged only 9 bu. per acre, Dr. Harold F. Rhoades, University of Nebraska agronomist reported.

"These results point out clearly the he importance of an adequate moisture supply for corn production," Dr. Rhoades said. "However, it seems evident to many that the average yield nder irrigation should be greater han 60 bu."

Dr. Rhoades said that failure to get more than 60 bu. per acre was due in large measure to the failure of many farmers to follow good management practices, including proper fertilization, and a stalk population sufficient to use all the available moisture and nutrients.

"A successful irrigation farmer," he said, "must combine all the good production practices to obtain high corn yields so that satisfactory returns may be realized from the added cost of irrigation."

In general, adequate fertilization for corn in Nebraska means supplying nitrogen fertilizer, Dr. Rhoades said. Phosphate is needed in addition to nitrogen in some cases, and a complete fertilizer mixture of nitrogen, phosphate and potash is needed in a few instances.

Corn yields were increased nearly 100 bu. per acre in some Nebraska tests, Dr. Rhoades said, when 160 lb. of nitrogen per acre was added on high productivity soils well supplied with phosphate and potash and good irrigation practices were followed.

In some Nebraska tests, yields of irrigated corn were nearly 100 bu. greater when 160 lb. of nitrogen fertilizer per acre was added on high productivity soils well supplied with phosphate and potash, than on low productivity soils to which no nitrogen was added, according to Dr. Rhoades.

He reported that the acreage under irrigation in Nebraska has nearly trebled since 1939. The 1955 irrigated acreage was 1,440,000 acres, compared to 523,000 acres 16 years ago. There has been an appreciable expansion of irrigation in other Corn Belt states, he said. A considerable percentage of the water now used for Nebraska irrigation comes from underground supplies. Altogether, 11,722 irrigation wells were reported in the state at the beginning of 1955.

In 1952 corn yields as high as 153 bu. per acre were obtained in some Nebraska tests from 6 irrigations supplying 14.2 inches of water. Yields of 144 bu. per acre came from the use of 3 irrigations supplying 7 inches of water at tasseling and silking time. Without any irrigations, yields were 69 bu. per acre. The soil was wet to a depth of 6 feet at planting time.

Under moisture stress, the corn plant's nitrogen intake was influenced in a manner similar to dry matter production, Dr. Rhoades said.

The corn plant's intake of phosphate practically ceased when moisture stress became severe, he said; and there was a tendency for moisture stress to decrease the phosphorus content of the plant. Potash intake ceased when moisture stress first became noticeable, he reported. At that time there was essentially as much potash in the "low" as in the "high" moisture plants, or 76% of the total potash used by the "high" moisture plant in the entire growing season.

Date Set for Kentucky Fertilizer Conference

LEXINGTON, KY. — The annual Kentucky Fertilizer Conference will be held Aug. 1 at the Guignol Theatre, University of Kentucky, Bruce Poundstone, head of the state Department of Feed and Fertilizer, has announced.

HEADS ASSOCIATION

SAN FRANCISCO—Wilson Meyer has been named president of the No. 1A District Agricultural Assn., the California state agency which owns and operates the San Francisco Cow Palace. Mr. Meyer is president of Wilson and Geo. Meyer & Co., Pacific Coast importers and distributors of agricultural and industrial chemicals. He has been a member of the district's board of directors since 1948. The Cow Palace will be the site of the 1956 Republican national convention.

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The regional circulation of this issue is concentrated in the Southern states.

Manufacturing and Marketing Fungicides

When the term "pesticide" is used nearly everyone tends to assume it means materials for the control of insects. Actually, the word is a rather all-inclusive one, taking in not only insecticides, but weed killers, rodenticides and fungicides.

The importance of fungicides takes on significance when one considers that plant diseases of all kinds cause an average loss in the U.S. of at least $3 billion each year. Conservative estimates indicate the presence of some 7,000 fungi, 175 bacteria and 163 viruses that attack plants. At least half of this great loss on economic crops is caused by fungi which could be controlled with the diligent use of presently available fungicides and control measures.

The part played by industry in meeting the fungicide requirements of agriculture was discussed rather thoroughly by Gordon A. Brandes, Rohm & Haas Co., in his talk before the fungicide colloquium at the recent meeting of the American Phytopathological Society. He pointed out that "we would still be back in the days of homemade Bordeaux mixture and crude sulfur, were it not for the modern chemical industry," and added that industry's greatest contribution toward meeting our fungicide needs is its production of these chemicals in quantity, standardizing their quality and getting them to the farmer and the gardener at a reasonably low cost.

This last achievement, that of keeping down the cost of fungicides, should be heralded as a major accomplishment, when one considers all the heavy expense that must be borne by the company developing the fungicide for market.

Mr. Brandes observed that the manufacturer, because of his legal obligations as the seller and for moral reasons, must assure himself that his product is not unduly hazardous to use, or its use will not result in any harmful residues to the consumer of treated crops. Before a new fungicide goes very far even as an experimental compound, some preliminary evaluation of its mammalian toxicity must be made.

"If the material shows promise for commercial development, it then becomes necessary to obtain the complete toxicological evaluation of the material including its chronic toxicity, vapor hazard, skin irritation, etc. The cost of this work is underwritten completely by the manufacturer but the work usually is conducted in outside independent laboratories set up primarily for investigations of this kind."

It should also be considered that the manufacturer must develop accurate and specific analytical methods for a new compound so the level of residues remaining on treated food crops can be measured and so the product may be assayed during production and by pesticide regulatory officials. The industrial laboratory is the logical place for this chemical work because of its "know-how" and familiarity with the product.

The initial residue determinations on food crops are made in the laboratories of the manufacturer or through a special grant arrangement with certain local experiment stations, the cost being borne, of course, largely by the firm.

Present-day consciousness of pesticide residues on foods has added to the importance of this consideration to the extent that at least one industry official has estimated that the new Miller legislation will add an extra $50,000 to $100,000 expense to the cost of developing a commercial pesticide.

The state experiment stations are giving more attention to the residue picture and this may in turn mean the establishment of residue analytical laboratories at the local experiment station level, as well as new experimentation to determine the effects of dosage, timing and combinations of various toxicants.

Involved in this picture is the integration of work done by different experiment stations in a given area, since it is obvious that forty-eight separate states cannot afford to collect the performance data and the residue data for every pesticide on every crop grown in their own state. By the same token, neither can the manufacturer be expected to obtain these data in each state. "Neither can the manufacturer operate under different interpretations and regulations of the federal legislation by each of the 48 states," Mr. Brandes declared.

"The ultimate purpose of the field testing, residue studies, and toxicological investigations conducted by the manufacturer, is to enable him to write an acceptable, accurate and intelligent label," the scientist pointed out. "The label must accompany the product when it is offered for sale. It is in effect a legal obligation on the part of the manufacturer that the product is effective for the purposes claimed and if used according to the directions will not result in residues exceeding legally established tolerances.

"These labels are carefully scrutinized by both the USDA and the Food and Drug Administration, and by the legal, research and sales departments of the manufacturer. The best advice industry can give to those making fungicide recommendations and to the growers who are using the product is 'read carefully and follow explicitly the directions for use on the label.'"

The research and development cost of a single fungicide has been estimated to range from 750 thousand to 1¾ million dollars. This figure will vary depending on the nature of the compound and the difficulty that is encountered in developing the manufacturing process, the formulations, residue methods, the toxicological data, and performance data. One company reports it is spending $500,000 annually in fungicide research and development.

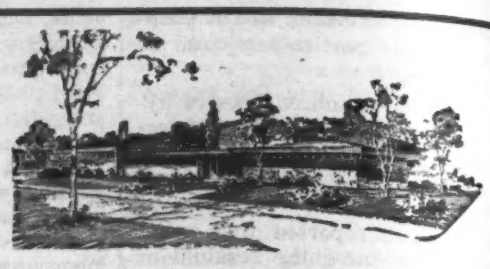
It has been reported by several industrial chemical concerns that the research and development costs on agricultural pesticides per dollar sale of these materials is roughly twice the cost of these expenditures for their general line of industrial chemicals. Whereas the average company's research budget may run 4 to 5% of sales of its general line, it is not at all uncommon for the research and development costs on agricultural chemicals to run 8 to 10% of the dollar sales volume. At any rate, the costs are extremely high and they are borne almost exclusively by the chemical manufacturer.

The high cost of agricultural chemical research and development is a matter of great concern to the research directors and the corporate management of any of the companies engaged in this business. These costs have undoubtedly kept many companies from getting into the agricultural field and have caused others to curtail or drop entirely their activities in that direction.

"We may well wonder why any industrial chemical company would continue its efforts in the agricultural chemical field," Mr. Brandes opined. "Perhaps a partial answer is the desirability of a diversified chemical operation. Probably more important is the recognition that a prosperous agriculture offers a tremendous market for chemicals other than pesticides, . . . among which are plant food constituents and fertilizer intermediates."

In view of the foregoing, the salesman emerges as one of the key men in getting merchandising to moving. It is no trite saying that declares: "Nothing happens until

(Continued on page 33)



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MEETING MEMOS

...b. 28-29—Fifth Annual Pesticide Chemicals School, Clemson House, Clemson, S.C., Dr. J. H. Cochran, Dept. of Entomology and Zoology, Clemson College, Clemson, S.C.

...larch 1-2—Potomac States Division, American Phytopathological Society, Plant Industry Station, Beltsville, Md.

...larch 6-7—Fifth Annual Western Cotton Production Conference, Fresno Hacienda, Fresno, Cal.

March 14-18 — National Agricultural Chemicals Assn., Spring Meeting; Hollywood Beach Hotel, Hollywood, Fla.; Lea S. Hitchner, NAC executive secretary, 1145 19th St. N.W., Washington 6, D.C.

March 28-30—North Central States Branch, Entomological Society of America, Purdue University Memorial Union, Lafayette, Ind.

April 10-12—Council for Agricultural and Chemurgic Research, 21st Annual Conference; Congress Hotel, Chicago; Sec., John W. Ticknor, Council for Agricultural and Chemurgic Research, 350 Fifth Ave., New York 1, N.Y.

April 16-17—Fourth Annual California Fertilizer Conference, Citrus Experiment Station, University of California, Riverside. Sidney H. Bierly, secretary, 457 Huntington Drive, San Marino 9, Cal.

May 7-9—Carolinas-Virginia Pesticide Formulators Assn., Inc., Spring Meeting, Ocean Forest Hotel, Myrtle Beach, S.C.; W. R. Peele, 516 S. Salisbury St., Raleigh, N.C., secretary-treasurer.

May 16-18—Synthetic Organic Chemical Manufacturers Assn., Annual Outing, Skytop, Pa.

May 20-22—42nd Mid-year Meeting, Chemical Specialties Manufacturers Assn., Drake Hotel, Chicago; H. W. Hamilton, secretary, 50 E. 41st St., New York 17.

June 10-13—National Plant Food Institute, Annual Convention, the Greenbrier, White Sulphur Springs, W. Va.

June 28-30—Association of Southern Feed & Fertilizer Control Officials, 14th Annual Convention, Hotel Roanoke, Roanoke, Va.; Bruce Poundstone, Kentucky Agricultural Experiment Station, Lexington, Ky., Secretary-Treasurer.

June 28-30—Seventh Regional Fertilizer Conference of the Pacific Northwest, Chinook Hotel, Yakima, Wash.

July 12—South Carolina Fertilizer Meeting, Tour of Edisto Experiment Station, Blackville, S.C.

July 19-20—Southwestern Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

July 25-27—Northwest Association of Horticulturists, Entomologists and Plant Pathologists Conference, Northwest Washington Experiment Station, Mount Vernon, Wash.

Aug. 1—Kentucky Fertilizer Conference, Guignol Theatre, University of Kentucky, Lexington, Ky.

Nov. 19-20 — Eastern Branch, Entomological Society of America, Hotel Haddon Hall, Atlantic City, N.J., B. F. Driggers, Rutgers University, New Brunswick, N.J., Secretary.

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AGRICULTURAL CHEMICAL SALESMAN WANTED

We are expanding our Agricultural Chemical Division and are looking for a good agricultural chemical salesman to cover the southern Illinois-western Kentucky area. If interested reply giving full resume of yourself including education, experience, age, photo and salary expected. Address Ad No. 1496, Croplife, Box 67, Minneapolis 1, Minn.

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We are seeking a man with experience in the fertilizer or agricultural field with proven sales ability in these fields. Experience should be in the Missouri, Iowa, Kansas, Minnesota area.

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We prefer a man of some maturity, age range mid-thirties to early forties.

All inquiries handled in strict confidence. Send resume and indication of remuneration to: Ad No. 1457, Croplife, Box 67, Minneapolis 1, Minnesota.

EDITORIAL

(Continued from page 22)

somebody sells something." The increasing complexity of the agricultural chemical field has necessitated a corresponding increase in the level of technical training and experience possessed by men in the capacity of salesman.

The salesman's main objective is to get the order, but it is well known that he won't get it unless he can demonstrate to the farmer that his product will do a satisfactory job for the money. If he doesn't do this he most certainly will not get the repeat order.

The local distributor and dealer are also key men in meeting our fungicide needs. Their experienced salesmen are in daily contact with the grower in his field and orchard. But even more important, the dealer has the fungicides in stock close to the farm where they will be needed. Very few farmers today are more than a few minutes away from a complete stock of reliable pesticide materials. In a matter of hours the farmer can usually cope with any emergency that may arise.

In the final analysis unless the fungicide can be sold successfully, there will be no need for a production plant, administrative personnel, and the people engaged in the manufacture of the material. Investigators and industrialists alike are aware that the farmer who uses the fungicide must realize a profit from its use, and the manufacturer must realize a profit from its sale. This principle is axiomatic in the American business world. Without the profit incentive the vigor of the industrial economy of this country and the world would soon stagnate.

The net profit realized from sales will in a large measure influence the amount of money and effort which will be reinvested in further research and development on new agricultural fungicides.

Open House

MADISON, WIS.—Visitors to the 1956 Wisconsin Farm and Home Week attended open house in the University of Wisconsin's recently-constructed bacteriology building and soils greenhouses. The bacteriology building houses a number of classrooms, laboratories, a departmental library, underground plant growing rooms, and a "pilot plant" for research and instruction in fermentation processes. Visitors to the soils greenhouses saw crop experiments on different soil types, soil nutrient studies, tree seedlings growing in a greenhouse compartment, and experiments on the effect of various soil treatments.

INDEX OF ADVERTISERS

Abrasion & Corrosion Engineering Co.....
Adams & Doyle, Inc. .....
Agricultural Chemicals Division, Pittsburgh Coke & Chemical Co.....
Agricultural Chemical Equipment Co.....
Allied Chemical & Dye Corp., General Chemical Division .....
Allied Chemical & Dye Corp., Nitrogen Division 24
American Potash & Chemical Corp.....
Anco Manufacturing & Supply Co. .....
Armour Fertilizer Works .....
Ashcraft-Wilkinson Co. 8
Atkins, Kroll & Co. 15

Bagpak Div., International Paper Co. ....
Baker, H. J., & Bro. .....
Baughman Manufacturing Co., Inc. .....
Beaird, J. B., Co. .....
Bemis Bro. Bag Co. .....
Blue, John, Co. .....
Bradley & Baker 4
Burkhardt-Larsen Co. .....
Burrows Equipment Co. .....
Butler Manufacturing Co. .....

Calcium Carbonate Co. .....
California Spray-Chemical Corp. .....
Carlile, J. C., & Associates .....
Chase Bag Co. .....
Chemical Service Corp. .....
Chipman Chemical Co. .....
Clover Chemical Co. .....
College Science Publ. .....
Commercial Solvents Corp. 18

Davison Chemical Co. .....
Deere & Co., Grand River Chem. Div.....
Dempster Mfg. Co. .....
Diamond Alkali Co. .....
Diamond Black Leaf Co. .....
Doane Agricultural Service .....
Donco, Inc. .....
Douglas Chemical Co. .....
E. I. du Pont de Nemours & Co., Inc.....

Eastern States Chem. Co. .....
Export Chemical Corp. of Colorado .....

Fairfield Chemical Division, Food Machinery and Chemical Corp. .....
Fischbein, Dave, Co. .....
Flint Steel Corporation .....
Floridin Company .....
Frontier Chemical Co. .....

Gandrud, E. S., Co. .....
General Chemical Division, Allied Chemical & Dye Corp. .....
Gotcher Engineering & Mfg. Co.....
Grace Chemical Co. .....
Grand River Chemical Div., Deere & Co...

Hahn, Inc. .....
Hammond Bag & Paper Co. .....
Henderson Mfg. Co. .....
Hercules Powder Co. .....
Highway Equipment Co. .....
Hough, Frank H., Co. .....
Hypro Engineering, Inc. .....

International Minerals & Chemical Corp... 2
International Paper Co., Bagpak Div. ....

Johns-Manville Corp. .....

K. B. H. Corporation, The .....
Kelly Ryan Equipment Co. 19
Ketona Chemical Corp. .....
Kolker Chemical Corp. .....

Krause Plow Corp. .....
Kraft Bag Corp. .....

Larvacide Products, Inc. .....
Lebanon Chemical Corp. .....
Lion Oil Co., Div. Monsanto Chem. Co.... 17

The Mackwin Co. .....
Meredith Publishing Co. 21
Wilson & George Meyer & Co. .....
Michigan Chemical Corp. .....
Midstate Machinery Co. .....
Midwestern Spray-Chemical Co., Inc.....
Minco Products Corp. .....
Minerals & Chemical Corp. of America...
Mississippi River Chemical Co. .....
Monsanto Chemical Co. .....

National Potash Co. .....
Naugatuck Chemical Div., U. S. Rubber Co. .....
Nelson, Edward S., Ltd. .....
New York Hanseatic Corp. 20
Niagara Chemical Division, Food Machinery and Chemical Corp. .....
Nitrogen Div., Allied Chemical & Dye Corporation 24
Northern Chemical Industries .....

Olin Mathieson Chemical Corp.,.....

Pacific Coast Borax Co. 7
Pacific Plastics Co. .....
Pennsylvania Salt Mfg. Co. of Washington
Pfizer, Chas., & Co., Inc..... 3
Phelps-Dodge Refining Corp. .....
Phillips Chemical Co. 11
Pittsburgh Coke & Chemicals Co., Agricultural Chemicals Division .....
Potash Company of America .....
Poulsen Company .....
Powell, John, & Co., Inc.....
Private Brands, Inc. .....

Rapids Machinery Co. .....
Residex Corp. .....
Rieke Metal Products Corp. .....
Riverdale Chemical Co. .....

Savage, K. E., Co. .....
Schrock Fertilizer Service .....
Shell Chemical Corp. 5
Smith-Rowland Co., Inc. .....
Sohio Chemical Co. .....
Specifide, Inc. .....
Spencer Chemical Co. .....
Stauffer Chemical Co. .....
Stewart-Warner Corp. .....
Stoker, H. S., Co. .....
Successful Farming 21

Tennessee Corp. .....
Thompson-Hayward Chemical Co. .....

Umbaugh Agricultural Chemical Co.....
Union Bag and Paper Corp.....
United Petroleum Gas Co. .....
U. S. Phosphoric Products Division, Tennessee Corp. .....
U. S. Potash Co. .....
U. S. Rubber Co., Naugatuck Chem. Div..
U. S. Steel Corp. 13

Velsicol Chemical Corp. .....
Virginia-Carolina Chemical Corp. .....
Vulcan Containers, Inc. .....
Vulcan Steel Container Co. 6

Woodbury Chemical Co. .....

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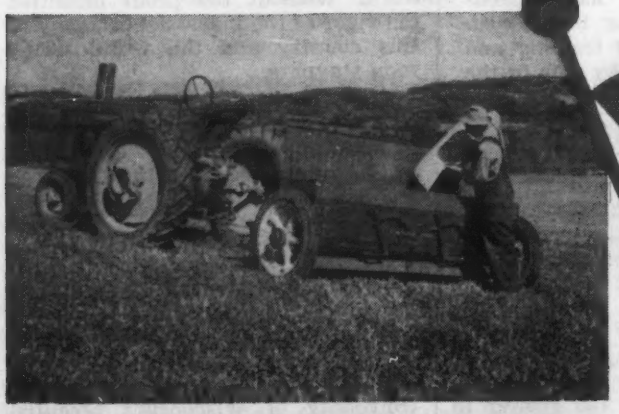

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